

PREDICATE CONJOINING IN HADIYYA:

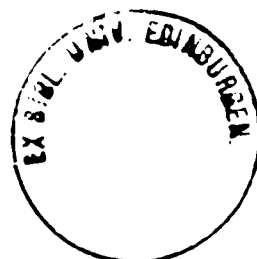
A Head-Driven PS Grammar.

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itt'uwvim ee sagara macc'eesa2a witt'ito2o. annanniccim
itt' gak' suuminne ama2naan wocc'u2uyy macc'eesa2a
maalalto2o. "neese annanniccim wonicc'oom ni gak' suuminne
wocc'u2uyy macc'eensoommok kuk hinkido2ne2i woša? ... neese
annanniccim waa2ika malaayyaam bat'o nihaaninne annannicc
suuminnem kuttu2uyy macc'eensoommulla." yito2o.

asse2amaa2n bat'o 2:6-11.

I declare that this thesis, and the research on
which it is based, is my own work.

Ronald James Sim,
Edinburgh, 1989.

ABSTRACT.

In examining certain structures of the East Cushitic language Hadiyya, this thesis, in keeping with recent trends, adopts a mono-stratal framework, framed in terms of the mathematical operation of Unification; namely Head-driven Phrase Structure Grammar (HPSG). Chapter 1 is devoted to an exposition of the model employing situation semantics.

Chapter 2 discusses the categories of noun, noun phrase, and verb. The discussion centres on the basic morphological categories of Person, Number, Gender and Case, and the variety of verbal forms which are relevant to an appreciation of following chapters, and a tentative (partial) feature system is set out.

Chapter 3 deals with the mono-clausal sentence, briefly expounding basic sentence types, with the focus of the chapter on the issues of subcategorisation, constituent order, "pro-drop", and agreement. Several revisions of the formalism are proposed, and a general goal formulated.

Part II deals with nexus mechanisms. First is a short chapter, 4, on canonical coordination as it occurs in Hadiyya, in which an attempt is made to formalise resolution rules, and a broader, cross-linguistic look is taken at the categories of Person, Gender and Number in coordinate phrases. Some of Hadiyya's other lexical connectors are also briefly considered. In the two final chapters, both subordinative and coordinative systems are reviewed, and these chapters provide an end-focus to the study. Chapter 5, discusses the adverbial clause, and the complementation system, while Chapter 6 covers clause chaining/ serialisation, switch reference, and the encoding of simultaneous events, in which agreement and control questions are addressed.

A short final chapter brings together some of the major theoretical suggestions arising.

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PREFACE.

Background to the Present Study.

My own researches into Hadiyya cover the period between October 1980 and May 1987, when I was engaged in service to the Ethiopian Evangelical Church of Mekane Yesus, under a work permit granted by the Provisional Military Government of Ethiopia. Formal research was undertaken as time permitted, during the fulfilment of my other duties, and informally by daily contact with a number of Hadiyya friends.

Those from whom I learned most include: Ato Tesfaye Tisoro, Ato Belete Loriso, Ato Alemayehu Kotiso (all of Lemo-Konteb, the northern Hadiyya speech area), Ato Daniel Hankore, and Weyzerit Getenesh Bogale (of the Sooro, or central speech area), and Ato Abraham Lealago (of the southern part of Sooro, where Hadiyya borders Kambaata and the Kambaata dialect Timbaaro).

Previous Work.

Hudson(1976) provides a good summary of both descriptive and classificatory work in the Highland East Cushitic group until that date. This consists of only a handful of rather sparse references: the only nineteenth century references being A. Cecchi(1887), and J. Borelli(1890), who record short word lists. These are followed by Enrico Cerulli(1925), who includes word lists and some comparative discussion. In 1937, the British and Foreign Bible Society published the "Gospel of St. Matthew" in Gudeilla, by which they style Hadiyya; this is not in very natural sentential form. Plazikowsky-Brauner's contributions (1960, 1961, 1964) are all based on pre-1940 field work, and are not more than moderately reliable. For example, her recording of both vowel and consonant length is poor (aakk and a2 for akk' and aa2 respectively, etc), and the exemplar she gives for verb paradigms, baa2 "go", is to my knowledge a Libido, but not a Hadiyya verb; her data, however, does not correspond in any regular way to either my own Hadiyya or Libido data. Stinson(1965) is a short collection of fables and proverbs. The fables appear to be faithful transcriptions of original spontaneous oral discourses and include a few performance errors, as well as reflecting an economy of expression that is uncomfortable when committed to writing. The transcription is unfortunately not completely accurate. Stinson(1976) is a short but reliable grammatical sketch. Hudson(op.cit) remains the best introduction available, but is obviously limited by its nature -- he summarises the morphologies of five HEC languages in a sketch of some 30 pages.

Abebe et al(1985) describes the verbal morphophonemics of the HEC languages apart from Alaba and Libido, and includes my summary of this interesting area of Hadiyya grammar. Korhonen et al(op.cit) reports on a dialect study which covered the northern languages (hereafter nHEC) of Alaba, Hadiyya, Kambaata, Libido and Timbaaro. Various other short contributions of mine are listed in the Bibliography. In addition, I hope to complete soon a fuller morphological study than this present work permits.

Acknowledgements.

My appreciation is due first of all to the Government of Ethiopia for the opportunity to live and work there from October 1980 until May 1987, and secondly to the leadership of the South-Central Synod of the Ethiopian Evangelical Church of Mekane Yesus, under Kes Fikre-Yesus Forsido, for the original invitation to work under the Synod's auspices, and the opportunity to assist them in their activity.

My sincere thanks are due to all those who taught me something of their language; especially Ato Tesfaye Tisoro, Ato Belete Loriso, Ato Daniel Hankore, Alemayehu Kotiso, Ato Abraham Lealago, and Weyzerit Getenesh Bogale. My earnest thanks are gladly accorded them for their enthusiastic and painstaking help, with the hope that they are satisfied with the results of their labour. Naturally, although I have in every place tried to make the best use of their linguistic intuitions about their language, I alone am responsible for every failure to achieve less than they may have wished. I want to record here my deep appreciation of their continued friendship.

To my supervisor, Prof. Ron Asher I owe my appreciation for inspiring confidence when progress was slow, and for stimulation and help at a number of points. To Ronnie Cann, my appreciation for refusing to let me away with glossing over difficulties, and for help in following through the formalisation. To Carl Pollard also, my appreciation for willingness to share ideas he was still working on.

I was able to check out some ideas by exchange of letters with my Hadiyya mentors in the later stages of writing up, and I want to record my sincere thanks to Denise Perrett for her help in this.

My gratitude is also due to the following, for underwriting fees incurred in completing this study at the University of Edinburgh:

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The thesis has been typed with the help of SIL's software packages **Ed** and **Manuscripter**, and printed on their Scottish Office equipment, with the help of Hamish Ralston.

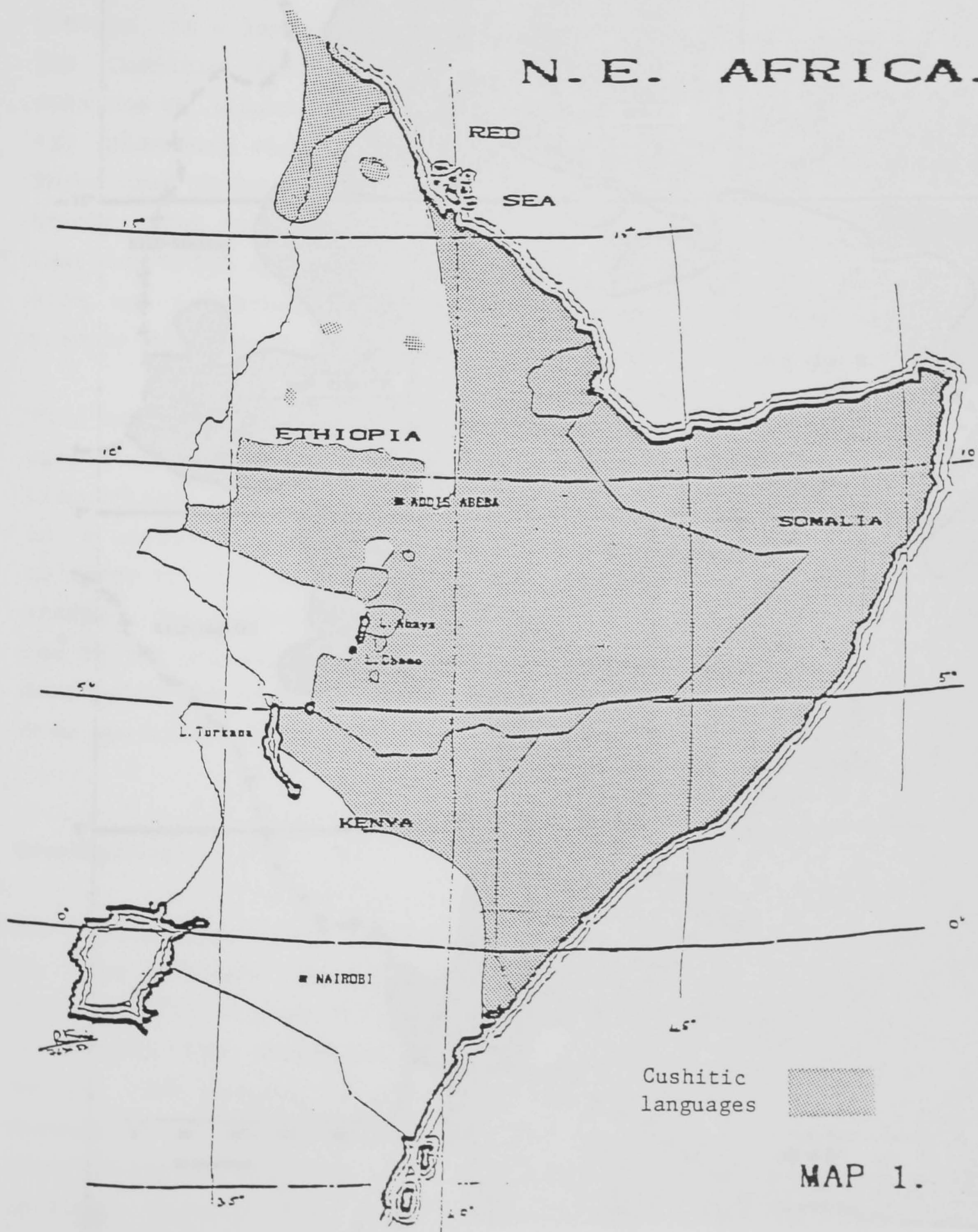
I also want to thank various friends and colleagues for their friendship and stimulus over the years: John Bendor-Samuel, Klaus Wedekind, Dick Hayward, Ernst-August Gutt, and Francis Katamba among others, and also many friends and churches who have supported us over the years.

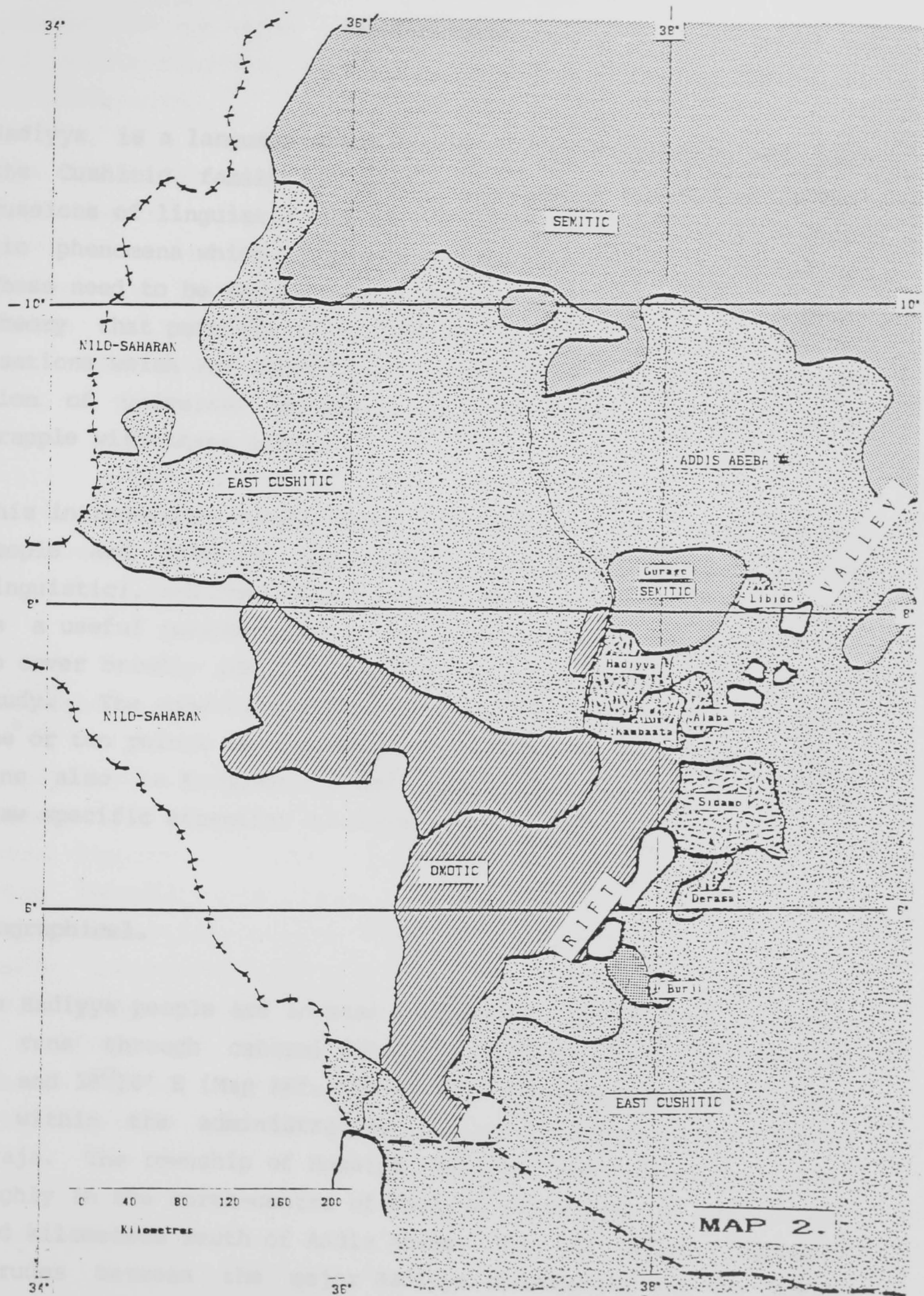
Karin, Gordon, Shona, Lorna and Gillies are to be thanked for their exemplary contributions to Chapter 1, and their tutelage in tackling some of my rough edges.

Above all, to Margaret, who contributes so much to my life, and whose constant encouragement and willing acceptance of extra responsibilities made a substantial contribution to my completing this thesis, my deepest love, and thanks.

Ronald J. Sim,
Inverness, 1989.

N. E. AFRICA.





INTRODUCTION.

Hadiyya is a language whose syntax is uninvestigated, and even the Cushitic family to which it belongs is unfamiliar in discussions of linguistic theory. It exhibits a number of syntactic phenomena which linguistic discussion likes to term exotic. These need to be amenable to felicitous analysis in any grammar theory that purports to capture in its formalism those generalisations which are significant to an understanding and delineation of universal grammar. A major aim of the thesis is to grapple with these issues.

This introduction covers basic information about the Hadiyya people and language (geographical, demographic, cultural and linguistic), and the scope of the study. Hudson(1976:232-246) is a useful introduction to these matters, and here I want only to cover briefly similar ground as orientation for the present study. The opportunity will also be taken to revise or correct one or two points of information in Hudson (op.cit), as has been done also in Korhonen, Saksa & Sim (1986), although I will not draw specific attention to these points.

Geographical.

The Hadiyya people are located to the west of the Rift valley as it runs through central Ethiopia, between 7° and 8° N and 37° 30' and 38°10' E (Map Ref. ETH 4; see Bibliography), and largely within the administrative region of Kambaata and Hadiyya Awraja. The township of Hosaina (Hadiyya name Waachamo) lies roughly in the north-centre of Hadiyya territory, at approx. 235 road kilometres south of Addis Abeba. To the south, Kambaata intrudes between the major Hadiyya conurbation and the Baado-waacho section, lying just south of Kambaata-Hadiyya Awraja. The Libido community to the north, living in Maraqqo district

between the towns of Butajira and Zway, speaks a closely related language, but one which needs to be considered linguistically as well as geographically separate. See Korhonen et al (1986) and Sim(forthcoming).

There are enclaves of Hadiyya populations in several other parts of the country, of which the best known are in Bale and Arussi Provinces. These are considered to be migratory off-shoots from the home area identified immediately above, which have occurred because of the expansion of population and growing scarcity of land. These groups are reported to have shifted to the surrounding Oromo language (Haile B. A, 1973). Another reported enclave is around Wolkite, south-west of Addis Abeba (Haile op.cit; Hudson 1976:233 and references cited there), although the linguistic data available to me is confusing, not revealing consistently the features of any known northern HEC language, Alaba, Kambaata, Libido, or Hadiyya.

Demographic.

The population of Hadiyya is undoubtedly rather larger than the estimate of 700,000 given in Bender (1971:222) and (1976:9); several figures for the population of the Kambaata-Hadiyya Awraja (Region) from different surveys or censuses carried out by various government authorities within the past decade do not closely correspond, and my personal estimate would put the population at between one and one and a half million. The Awraja is residence for considerable numbers of Gurage along the northern boundary, as well as unknown numbers of Wolaitta on the southern fringe; some 500,000 Kambaatas people the south centre.

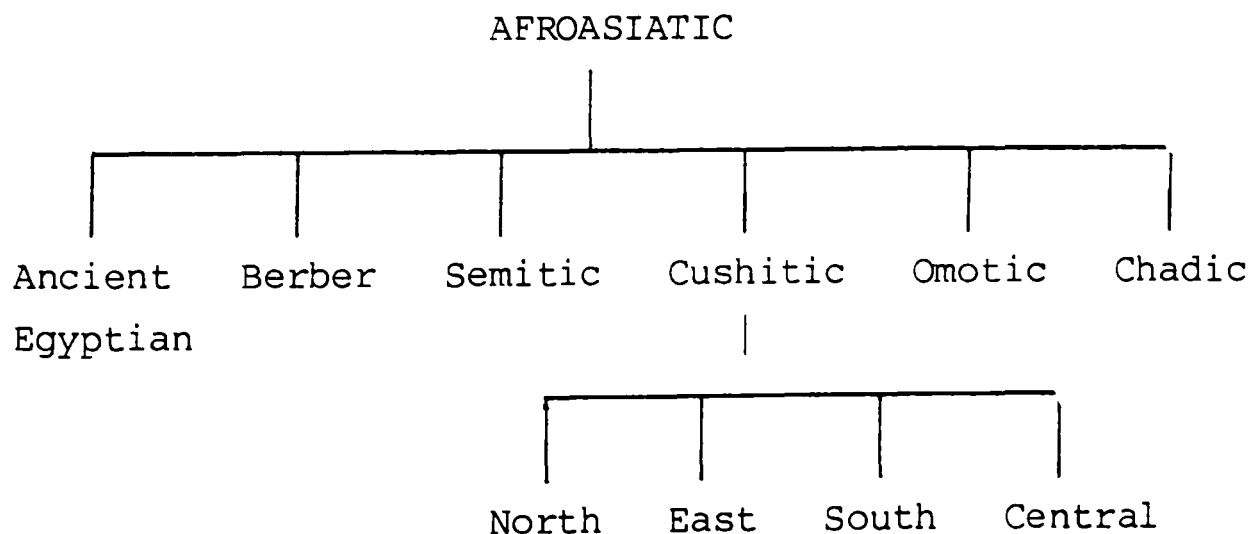
Cultural.

The Hadiyya people know themselves to have been nomadic pastoralists in the recent historical past, and to have settled and moved to an agricultural lifestyle at least partly under the

influence of the Semitic Amharas, with whom they carried on repeated warfare in the nineteenth century. It is also well known that they now represent an insete culture,¹ which is clearly a cultural innovation, generally attributed to Omotic influence, as well perhaps, as Gurage. (See Cerulli 1956, although this is a very fragmentary and somewhat misleading account, Shack 1966, 1974, and Bender 1976). Drought and disease in recent years have resulted in large areas being now clear of insete, which is being replaced by the cereal grains. This is partly because of the two above-mentioned factors, partly a spontaneous cultural, economic and dietary shift, in which various national factors are not without influence.

Linguistic.

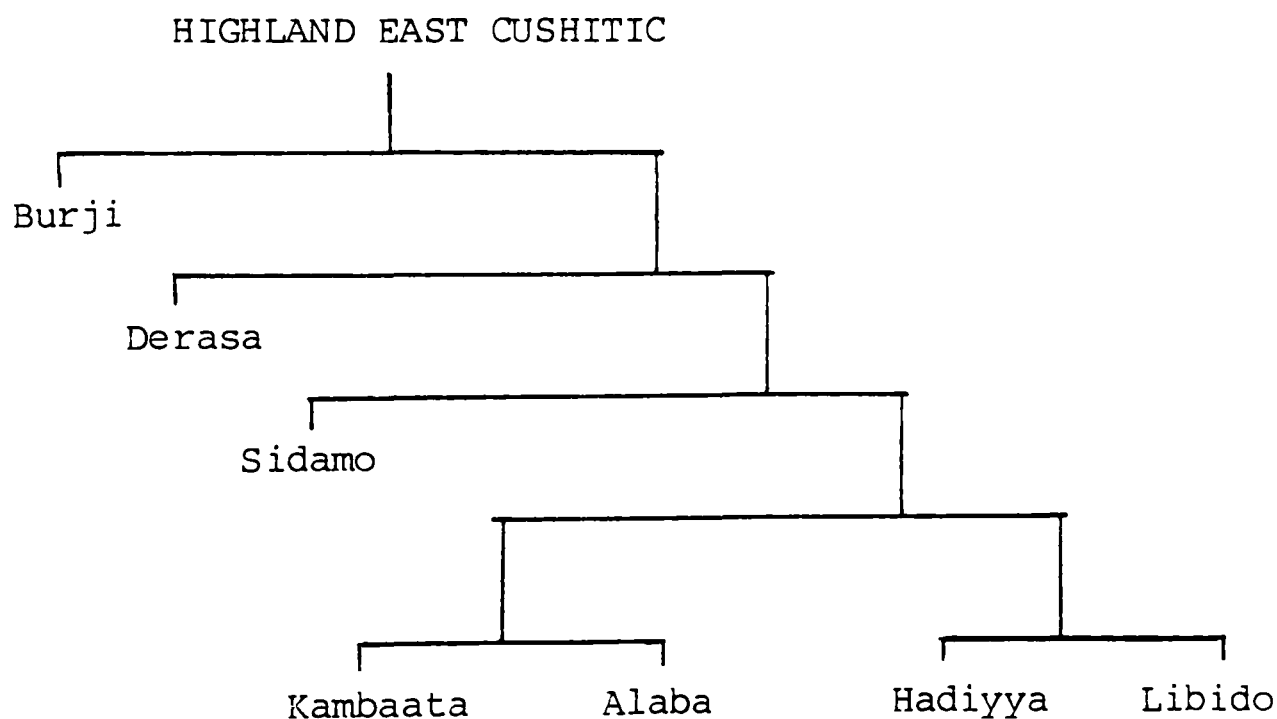
Cushitic is one of six coordinate branches within the super-family Afroasiatic, although the status of the Omotic branch is still in some dispute. (See Diakonoff 1984, for example, who refutes the separation, and Zaborski 1986:i, who remains open-minded).



The East Cushitic languages(EC) lie in a broad arc running from the Sudan-Ethiopia border on the Red Sea, through the eastern

1. Insete, or so-called "false banana", spec. Insete edule ventriculosis, is a food staple, and otherwise has central significance in their material culture.

half of Ethiopia, and down into Kenya (see Map 1), and are now generally divided genetically into Lowland, Highland and Dullay Branches. Hadiyya is one of the Highland East Cushitic (HEC) languages (formerly called the Sidama group), which, following Korhonen et al (op.cit) are to be numbered as seven. From north to south these are Libido, Hadiyya, Kambaata, Alaba, Sidamo, Gedeo and Burji, the membership of this last being still controversial. (See Map 2). Of these, Hadiyya is in physical contact only with Kambaata. The close genetic groupings of Libido with Hadiyya, Alaba with Kambaata, and to a lesser degree, Hadiyya with Kambaata, led Korhonen et al (op.cit) to postulate the cover-term 'northern Highland East Cushitic' (nHEC) for these languages. This adds a little complexity at the northern end, but does not otherwise affect the 'family vine' proposed by Hudson(1981).



The linguistic milieu otherwise includes contact with the Gurage languages (especially Silti and Innemor) to the north, where Hadiyya and Gurage communities interpenetrate in the same territory. There is also the small, and now declining Masmās (Gurage) community in Konteb Woreda (District). There are also some Omotic contacts with Janjero across the Omo Valley on the west, and with Wolaitta to the south.

Internally, Hadiyya is linguistically very uniform, without serious dialect differences; Hadiyyas themselves recognise the speech areas of Sooro (of Timbaaro Woreda to the south-west of Hosaina, and extending south into Omo-Shalako Woreda), the Baadowaacco area (outside the Province, contiguous to Kambaata on the latter's southern boundary). Shaashogo (in the low-lying eastern parts around Doisha and the lake and marsh of Boyo west of Billatte River), and the northern area (covering both the Leemo and Konteb Woredas). See Haile B. A.(1973) and Korhonen et al(op.cit).

The Cushitic languages of Afroasiatic are generally strongly verb-final -- only Yaaku, in Kenya is not (Heine, 1974), but while we may posit the most basic constituent order to be SOV, in Hadiyya at least, the grammatical object frequently precedes the subject in normal discourse. This issue is taken up in Chapter 3. [Note that Hetzron,1980:88f for Beja (whose Cushitic status is repeatedly under question) and (op.cit:94ff) for other Cushitic speculates on some evidence of a previous VO word order]. The same freedom of order is to be found among constituents of the noun phrase, with once more the clear restriction that the head word is phrase final. See Chapter 2.2. Otherwise, in general, features thought typical of SOV languages are to be found: modifiers precede their head, the genitive precedes the head, subordinate clauses precede their matrix clause, and suffixing rather than prefixing occurs.

Scope of the Present Study.

The Cushitic languages are still almost unknown to the majority of theoretical linguists; it is remarkably rare to find one referenced or cited in discussion covering the live issues of current linguistic debate. In view of this, and since no work of either length or depth is available on the syntax of Hadiyya, it is one intention of this study to include an outline of some of Hadiyya's basic syntactic structures, before entering into a detailed investigation of some major sentence structures, which

will include an elucidation of the agreement and control questions raised. The detailed focus will concentrate on clause chaining (serialisation) and other aspects of clausal coordination, including switch reference, and these will be offered in contrast to the mechanisms of subordination and canonical coordination.

A word must be said about the data offered in support of claims made. Data which were directly elicited are used of course, but this is frequently strengthened by further exemplars drawn from a rather large corpus of written or oral text material of various sorts. This includes oral traditions, cultural explanations, fables, (auto)biography, sermons, prayers, procedural, explanatory and hortatory discourses, conversation, and I have drawn freely from it as a source of data unlikely to be influenced by an outside language, as directly elicited materials might be. I usually draw attention to data taken from this corpus, and I include several short discourses, or texts, in the Appendix. Ungrammatical, or semantically unacceptable forms have of course been investigated via a more direct elicitation and dialogue.

It is not my intention to either review, or contribute to the debate between so-called formal and so-called functional approaches to linguistic theory, but it is pertinent to note the following quotes, and set out a major aim of the thesis to be consonant with their combined expressed feelings.

Greenberg(1978:v,vi) provides a good starting point, in his setting out of the goals of linguistics as he perceives them. Thus

"The mainspring of the contemporary interest in language universals is the conviction that linguistics as a science must develop broader goals than the description of the structures of the thousands of individual languages which exist in the present or of which we have records from the past. It must be

broader even than a body of generalising theory concerning how such descriptions can be carried out.

...

The original goals of the Project [on language universals; RJS] were stated ... They were to formulate cross-linguistic, and if possible, universally valid empirical generalizations about language structure; generalizations, that is, which hold true for some significant universe of languages and which at the same time are capable of being refuted by actual language data. The fact that such generalizations cannot be verified without reliable cross-linguistic data justifies the other original objective of the Project, which was to collect data from various languages of the world and store them in precise and comparable form. These two objectives were seen as not in themselves sufficient, but nonetheless necessary parts of the long-range goal of accounting for similarities and differences among human language in terms of increasingly general laws overarching various apparently unrelated aspects of language structure." (ibid).

Neither description, nor theory is a sufficient goal by itself; indeed Greenberg goes further, and proposes that the investigation of language universals is primary.

The need for close attention to both description and theory, on the other hand, has recently been explicitly articulated by Gazdar, Klein, Pullum and Sag(1985) [GKPS (1985)]:

"A necessary precondition to explaining some aspect of the organisation of natural languages is a description of the relevant phenomena which is thorough enough and precise enough to make it plausible to suppose that the language under analysis really is organised in the postulated way.

"... Consider ... the issue of whether an explanatory account of some grammatical phenomenon can be provided without the descriptive detail having been worked out. It has regrettably become more and more common of late to find linguists suggesting that broad hypotheses about grammatical theory can be discussed in the absence both of formal work that demonstrates that certain implications follow from those hypotheses and of descriptive work showing that the putative implications are well confirmed." (op.cit:2).

The same emphasis is noted in the work of functional linguists; see, for example, (Nichols & Woodbury, 1985), who assert that they are dealing with

"... languages with radically different clause organisation from those that have informed most theoretical work on syntax. ..." (op.cit:1).

They then go on to claim that the theoretical constructs that the book proposes are

" ... not simply the consequence of an exotic data base. They are the natural product of a perspective on linguistic theory growing out of descriptive work: an inductive, comparative, phenomenon-oriented approach which in our opinion has not been sufficiently articulated." (ibid).

And finally, a cautionary note from Gazdar, Klein, Pullum and Sag(op.cit): a putative universal is not to be "explained" by merely being identified; rather

"Only when it can be shown to be a non-trivial consequence of the definition of the notion 'possible grammar' can it be regarded as explained, because while it resides in the form of an autonomous statement it can be modified, enhanced, weakened, or

even discarded with no consequences for the rest of the theory." (op.cit:3).

It is increasingly difficult in modern linguistic research to balance the competing claims for in-depth formal study of a fragment of a grammar, broader descriptive study of a wider range of constructions, and cross-linguistic work on universals; see the remarks in Cooper (1980) also.

This tension is perhaps at its most acute in work on a little reported language, where little or no explicit work on any part of the syntax can be assumed as a framework. In such cases, even the most basic descriptive treatment may be lacking, and the need for a surface-based account is eminently obvious. It is here that the comparatively narrow focus of attention in current formal linguistics conflicts with the variety and complexity of data thrown up by even a few brief paragraphs of coherent human discourse. Then too, the competing desires of various areas of linguistics -- historical-comparative reconstruction, description, and theory -- constrain any major piece of work to attempt to address the "live issues" of different subject areas, and different groups of linguists.

Cushitic studies hitherto have focused much attention on comparative and diachronic aspects, and I think it can be fairly claimed that there is a serious lack of good, broadly-based descriptive work in most languages which is a prerequisite for further progress. Very little attention has been devoted to formal treatments: Bliese(1981) and Saeed(1984) in the framework of EST, and Wedekind(1989) in a functional grammar framework are notable recent exceptions.

With these things in mind, the present work deliberately chooses to address both the descriptive and theoretical audiences, and struggles with the balance -- to present a wide range of data and constructions from a little-known language, and yet at the same time to attempt to provide sufficient depth to properly

constrain an analysis of such a fragment which has theoretical import. The overall tone however, will not be polemic, although I confront recent theoretical options with data from Hadiyya in a number of places. In order to make the work a little more relevant for diachronic studies, I have permitted myself a number of short digressions, in either the text or an occasional footnote. Whether I have the balance right I must leave to others to determine!

One corollary of opting to present such a wide range of Hadiyya grammatical phenomena in a constrained formal foundation, is that the limitations of space and scope force me to leave open a number of the issues raised. For example, although time is taken to sketch in some major descriptive details of the NP, none of the theoretical issues of quantifier scope and its link with variation of order of elements are raised. Also, although a question concerning the nature of the morphological component of the grammar repeatedly raises its head, I give this whole matter scant attention after a preliminary outline of some major features in Chapter 2. I believe this is inevitable, given on the one hand the richness of the data of natural language, and on the other, the fairly narrow range of issues on which attention has been focused, and a degree of consensus reached, in most theoretical work, and in HPSG in particular. In short, it is impossible to avoid all "givens", and to argue for every construct of the theory.

Conceptually, the thesis did not originate in an investigation of a language in order to test a theory; that is, theoretical, formal constraints were not assumed from the outset. Rather it was the reverse: an awareness of the variety of syntactic mechanisms available and operative in the language was prior, and a formalism was sought which would incorporate these in a felicitous way, and which was itself theoretically well-motivated. It is with this in mind that a mono-stratal, generalised phrase structure model, and specifically, one which is formalised in a unificational framework was chosen.

PHONOLOGY.

In this thesis, it is not my intention to pursue any particular phonological (or morphological) approach. Certainly any transformational phonology is somewhat out of keeping with the mono-stratal nature of syntax which I adhere to; beyond that, a number of recent works look promising.

1. Vowels.

Hadiyya has ten vowel segments, five short and five long, whose approximate phonetic values should be clear from the orthography employed.

- (1) short: i, e, a, o, u
 long: i:, e:, a:, o:, u:

In what follows, long vowels will be written as digraphs in orthographic transcriptions. Slash brackets / / will enclose phonemic or morphemic transcriptions within the text, with either + or - being used to elucidate morpheme boundaries, when this is helpful; orthographic material in the text will simply be underlined. Phonetic material will be enclosed within square brackets [].

No short [a] is recorded following word initial /w/, in which position, by a low level assimilation rule, only [o] is realised: a ---> o /w __.

Word-final vowels are very much shortened before pause, and when this is pertinent in a transcription, they will be written as superscripts: ieaou. In connected speech, word final vowels are generally elided. A sentence-final vowel, which is generally part of a verbal form, is frequently, though not necessarily, articulated and voiced.

Word-final vowels occur phonetically long in the following environments: (1) the final verb of a quotation in a quotative sentence, and (2) the final vowel of a passage quoted aloud. (1) is illustrated below.

- (2) "danaamo." yukko. [dana:mo:]
 "'It's good." he said'

The length of the final [o:] in [danaamo:] is a phonetic matter only. If this short passage were quoted, the final vowel of yukko would be lengthened similarly.

Otherwise, long final vowels occur in particular syntactic environments, namely, in canonical coordination (4.1), and in converbs (more familiarly, gerunds; 2.3.2.1).

Vowel sequences do not occur, except that intervocalic glottal stop is lenis, to the point of elision. In such case, the two vowels concerned both remain syllabic.

- (3) asse2amaanco [2as:eama:n tʃ^{ho}]
 'messenger'

No restrictions in the distribution of vowels have been noted in words, but in roots, vowels are either front or back, not mixed, with /a/ common to both sets; most verb roots, however, are monosyllabic, and many which are not (both verbal and non-verbal) are probably relics of fossilised derivational processes.

2. Consonants.

Hadiyya has the following consonant inventory. /p', t', c', k'/ are ejective consonants, /ʃ/ is the palato-alveolar fricative IPA [ʃ], /c/ and /j/ are the palato-alveolar affricates IPA [tʃ] and [dʒ] respectively. /y/ is IPA semivowel [j].

(4)	t	c	k	
	b	d	j	g
	p'	t'	c'	k' 2
	m	n		
	f	s	ʃ	h
		z		
	w	l	y	
		r		

For other symbols, their phonetic value should be obvious. /z/ is rare, and really occurs only in the Sooro speech area.¹

Consonants can occur in a fortis, or geminate, articulation, and although it is controversial whether length or fortis articulation is the distinctive feature of this, Saib(1977), phonetic length is undoubtedly at least a partial exponent of the phenomenon.² This thesis will simply use the term geminate

1. I have been unable to verify the three items beginning with z in Plazikowsky-Brauner(1964), but have recorded a number of other items with this segment word-initially. It is my unverified suspicion that Sooro Hadiyya is influenced by the close proximity of Kambaata, in this and a variety of other effects, for example in the (optional) retention of gender agreement between demonstrative and head noun, and the more restricted use of -am- as a reciprocal marker in 3rd person plural verb phrases (Sim,1987b). Following Sasse(1979:19), it seems that *z > d in Hadiyya; examples of synchronic z have not been further examined yet.

2. See Cohen's (1936) comments on Amharic [in 2nd edition, (1970:39-42)], and Sim(1988a). Cohen remarks, "Les consonnes dites géminées sont prononcées avec une tenue prolongue; ce sont en réalité des consonnes longues " admitting also however, that the Amharic terms for the phenomenon are የጠበቀ : ፊደል : 'tight character' and የላላ : ፊደል : 'slack character.'

consonant, which is familiar in linguistics of the Ethiopic area. In transcription, geminate consonants will be written as digraphs, bb, tt, etc, with tt' etc being used for geminate ejectives. For evidence that consonant gemination is a pervasive process in (East) Cushitic and Ethiosemitic, see for example, Cohen(op.cit), Ferguson (1976), Hayward(1974), Saib (1977), Sim(1977), (1981). The geminate ejectives are realised as [2t'] etc phonetically. /r, h, 2/ do not occur geminated, although /kk/ occurs as the geminate counterpart of /h/, and geminate /ll/ occurs as the realisation of underlying geminate /r/. Intervocally, /w/ and /y/ only occur geminate.

The status of the glottal stop /2/ deserves mention. Word initially it occurs in the absence of any other consonant; in the phrase, word initial glottal is subject to crasis. Intervocally it can be construed to serve as a juncture feature, separating vocalic segments. In what was said above regarding vowel sequences, the glottal stop was identified as (one mechanism for) preventing their formation. Thus, the underlying form /2asse2-am-aan-cc-o/, 'messenger' is derived from the root 2asse2-, 'send' as VRoot+Pass.+Agv+Sgv+ABS, which is realised phonetically as [2asse2amaanco]. The medial glottal is generally lenis, and often elided, allowing the two vowels to occur in sequence. The glottal is potentially the final segment in a number of nominals in Nominative Case, and is readily elided in this environment, as in fella2- 'goats'(Nom) which in connected speech is [fel:a].

A glottal stop occurs also in a third environment, namely, in close transition as the first member of a sequence (cluster) with following /m, n, l, w, y/. Where this occurs in a verb root, at least sometimes it is a reflex of *ḏ, and marks either a middle-voice/benefactive derivation, or, in stems ending in -aa2-, a denominal verb stem (Hayward,1984; Sim,1987b). This is probably the case with 2asse2-, used above. The sequence 2l occurs in 2nd person and 3rd person feminine singular verb forms, resulting from a dissimilation process 2 + t --> 2l; here again 2-final roots are at least sometimes a reflex of *ḏ. That

these root-final glottals are not retained by derivational processes has been discussed in Sim(op.cit). Finally, such pre-glottalised clusters occur occasionally in lexical forms, in which case they apparently do have underlying status. Complete closure only occurs consistently in pre-glottalised sequences of consonants, elsewhere being subject to elision except in slow or deliberate speech. In this thesis, it will not be written word initially, but will be shown in all other environments. Historically, it is uncontroversial that the glottal stop was phonemic.³

3. Morphophonemics.

As is typical for many Afroasiatic languages, Hadiyya follows a Two Consonant Constraint in the formation of surface consonant clusters or sequences. Such clusters cannot occur either word-initially or word-finally. The membership of possible clusters or sequences is rather restricted, being either nasal-obstruent, or glottal with /m, n, l, w, y/. It hardly needs mentioning that what Leslau(1952) and (1985) termed "stop-attack" consonants in Kambaata and Hadiyya, such as pm, tn, tl are in fact pre-glottalised sequences, 2m, 2n, 2l etc. Strictly speaking, neither segment in the sequence can be geminate; glottal-liquid

3. The general prohibition on vowel sequences certainly represents the historical situation. The syllabic Ethiopic orthography tends to reinforce construing a phonemic glottal stop in word-initial and inter-vocalic environments, since the Aleph character **አ** historically is the glottal stop. But note that for Amharic itself there is a parallel debate possible concerning the (non-)systematic status of this segment. Cohen(op.cit:36) says, "L'ancienne occlusive glottale 2 et la spirante glottale sonore 3 ont disparu; les lignes qui servaient à les noter servent seulement de support graphique aux voyelles initiales, qui se prononcent avec attaque douce (comme en français) sans aucun élément consonantique."

sequences function as two-consonant clusters (contrast Hayward's analysis of Bayso, 1978:543), and geminates are themselves treated as clusters in word-formation processes. An innovatory process seen in Hadiyya, in which the Two Consonant Constraint is weakened to permit sequences of three consonantal segments, or two segments of which one is a geminate, is discussed in Sim(1988b).

The Two Consonant Constraint requires that lexical roots can contain clusters of up to only two consonants in non-initial position; but word-formation processes may juxtapose three consonants in underlying forms. These potential violations are generally avoided by vowel epenthesis. Restrictions on the range of permissible surface clusters of consonants is maintained in conjunction with the processes of assimilation and metathesis, as well as (occasionally) vowel epenthesis. (Sim, 1985 discusses this in the context of derivational and inflectional processes in the verb). These major strategies are exemplified in (5), whose forms are all in the Imperfect

(5)

/af-s-oommo/	--> afsoommo	'I spread' (C-sequence)
/mass-n-oommo/	--> massinoommo	'we take' (V-epenthesis)
/mar-n-oommo/	--> malloommo	'we go' (assimilation)
/has-n-oommo/	--> hansoommo	'we seek' (metathesis)

As noted already, in this thesis, I adopt no theoretical position relative to phonology; recent trends such as Bach & Wheeler(1981), Kiparsky(1986), Wheeler(1988) and Broe(1988), reveal promise in application to languages like Hadiyya. In particular, the development of a phonological component isomorphic with the syntactic and semantic components of categorial or functional-unificational linguistic signs (see Chapter 1) would be a happy achievement, although its incorporation in such frameworks is not without conceptual difficulty. In this connection, see Broe(op.cit) for a number of seminal ideas.

Similarly, work such as Aronoff(1981), and Hoeksema (1985) are

suggestive for the integration of morphological data. A general scheme for handling the morphological richness of an inflectional language like Hadiyya is outlined in 1.2.4 and 2.7, following Pollard & Sag(1987).

PART I.

CHAPTER 1.

THE MODEL.

Outline.

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1.1. HPSG: AN OVERVIEW.

HPSG is found in its most detailed exposition in a variety of contributions from Carl Pollard from 1984 onwards, and is more recently associated with Ivan Sag. These include Pollard(1984),

(1985), Sag & Pollard(1987), and Pollard & Sag (1987). In this chapter I shall only make reference to these to draw attention to points of contrast between them. Several other authors have also contributed, largely in publications of the Centre for the Study of Language and Information; see Bibliography.

From its name, it is clear that the notion of 'head' is a central concept in Head-Driven Phrase Structure Grammar, and the ways in which that notion is incorporated into the model will emerge in the following sections of this chapter, which is organised in cycles. First, I review very briefly and generically, the sources and characterisation of HPSG (1.1.1). I will then deal with the basic features of HPSG informally under the headings of the Linguistic Sign (1.1.2), Unification (1.1.3), Rules (1.1.4), and Linear Precedence (1.1.5) in a second cycle. The third cycle, 1.2, expands on these matters, with a more detailed look at the formalism and application of the model. Finally, in 1.3 I will make some evaluative comment. Illustrative material is drawn from English.

The chapter is intended as an introduction to the character and formalism of HPSG for those unfamiliar with it. It reviews -- but does not extend -- the works by Pollard and Sag cited above. I will attempt the latter in the context of the later chapters.

1.1.1. Sources and Characterisation.

It is frankly acknowledged by Pollard and Sag that HPSG drew a great deal of its initial inspiration from GPSG. Yet that is not its only acknowledged source; on the syntactic side, Categorical Grammar, Unificational Categorical Grammar(UCG), Functional Unificational Grammar(FUG), PATR-II, Lexical Functional Grammar(LFG), and Government and Binding Theory (GB) have all influenced its development, and situation semantics and discourse representation theory have had a major contribution on the semantics side. A third important input is from data theory, from which the concept of the linguistic sign as a partial information structure, and the combinatory operation of

unification, are drawn, and HPSG is intended to be a computationally tractable model.

In linguistic discussion, the notion 'notational equivalence' is one which has often been invoked in comparing the claims of different grammar models. In logician's terms, a notation may be held to consist of first, an alphabet, or set of primitives, and secondly a number of operations, or rules. Notational equivalence, strictly conceived, must then mean that the alphabets of primitive terms of two models stand in a one-to-one relationship (or are readily translatable into a one-to-one relationship), and that the two sets of rules or operations similarly stand in a one-to-one relationship (or are readily translatable into such). See Moravcsik(1980). More generally, the two notations are not so transparently comparable, and the notion of "generative capacity" has often been invoked in evaluation. "Weak notational equivalence" requires that two notations can generate (and parse, if we adopt a more neutral stance) the same set of strings; "strong notational equivalence" requires that in addition the notations assign the same structures to all strings.

An early use of the argument based on generative capacity is seen in Postal(1964), in which a number of American structuralist grammar models are compared to the then extant early Chomskyan T.G. It had by then been claimed¹ that (context-free) phrase structure grammars (CF-PSGs) were inadequate in principle for modelling human language, since it could be shown

1. The claim was made, at least. Chomsky(1956) is generally honoured with the distinction of first articulating the question of the (in)adequacy of CFGs to explain natural language. By the mid-sixties it was generally assumed that this inadequacy had been demonstrated, yet Gazdar(1982) could insist that it had not. It would seem that the practical demonstration of non-context-freeness from language data is to be accorded one or other of Huybregts(1976), Bresnan(1982), Culy(1985) or Shieber(1985). It was only the last two who finally laid the issue to rest.

that they were incapable of generating certain construction types. Postal's argument was primarily concerned with demonstrating that each structuralist model was notationally equivalent to a (CF-)PSG, thus 'proving' that each was inadequate. This is the strict, and stronger, sense. The focus is on the broad terms of the two notations, and concerned with showing the equivalence of their generative capacity.

But the notion has been used in the former sense, too. The intent here is to show that an alternative model offers no advantage since it employs an equivalent set of symbols and processes. Postal again provides an early example (op.cit, p.33f) in which he (rightly) concludes that the tagmemic +/- notation to mark optionality of a constituent is an exact equivalent of Chomsky parentheses in a PS rule, eg. (NP). A second example might be the comparison of different formalisms for the generation of reiterated constituents; where the right side of a rewrite rule contains either NP*, a set of rules containing one, two, three etc. NP nodes, or a rule with recursive capacity. A more recent example concerns the debate between proponents of GB and early GPSG over the issue as to whether the metarules of GPSG are mere notational equivalents of transformations, and hence offer no restriction of generative capacity. If the two rule-types are compared in isolation, it would seem that they are closely equivalent processes; but it is a very different matter to prove that the two rule-types are equivalent processes, when they operate, as they do, in different components of the grammar.

What such judgements tend to miss is the point that notations can be equivalent in generative power, for example, but not in the elegance with which each can model specific phenomena of natural language. It is also generally ignored that the ramifications of two equivalent notations need not also be equivalents. See Lyons(1968:230f) and Pollard(1988) for the same point.

That this is an observation pertinent to recent linguistic

evaluation is clear on various grounds. First, that the 1980s saw a general enrichment of phrase structure formalisms which enhanced their explanatory adequacy.²

Perhaps of particular interest here is the "slash" notation used to introduce a "gap" and pass featural information about the dislocated constituent through the tree to be associated with some other node. At first blush, it might be held that T-rules and the "slash" notation are notational equivalents. Reflection shows, however, that this can be upheld only in terms of the gross expressive power (Shieber 1986:6) of the two formalisms, and not in terms of their generative capacity. Thus, PSGs employing the "slash" notation to generate directly surface structures which contain dislocated constituents, remain PSGs; they are not elevated to the level of transformational models.

Secondly, it is noteworthy that recent linguistic enterprise has promoted a variety of monostratal formalisms. Among these are most of the source inspirations noted at the head of this section. There is a high degree of notational equivalence among all of these, although each one tends towards either a categorial or a phrase-structural framework. The degree to which HPSG has drawn upon Categorial Grammar, GPSG and LFG is particularly clear. For example, the f-structures of LFG and the signs of HPSG are obviously similar notations, both being partial-information structures with re-entrant potential. At the same time, however, each has pursued its idiosyncratic formal enrichments suggested by the distinctive features of its formal base, and these enrichments may not be notationally equivalent. These differing, and somewhat diverging notations, each makes its own elegant contribution to our understanding of various specific natural language problems, and the felicity

2. One of the underlying perceptions that made such an enterprise once more respectable was Gazdar(1982)'s insistence that it had never been properly demonstrated that natural language was other than context-free. Brame(1978) of course, is an example of an earlier move towards a monostratal (base-generated) syntax.

offered by one formal device over another is not to be lost sight of. There is explicit acknowledgement of this in Pollard (1988), which concludes that much is potentially to be gained by a careful eclecticism. This advocates a spirit which has generally been deplored in the sixties and seventies. (See a similar comment in Pollard & Sag, 1987:10, noting the "rapid obsolescence of a certain authoritarianism" and an earlier one by Stockwell, 1980:353).

A number of descriptive labels have been used to characterise HPSG and similar recent formalisms, and I want now to introduce some of these.

HPSG is an information-based theory of language. That is, the linguistic objects of natural language are primarily considered to be bearers of information within the community of people who know how to use them. This lends itself to an interpretation of communication within a coding model, but it does not in fact, preclude an assertion that human language achieves its communicative function partially, or even largely, by an inferential process such as that advocated by Sperber & Wilson(1986). How the basic tenets of Relevance Theory are to be operative within syntax and/or semantics, is another question, however.

HPSG is surface-based, by which is meant that it provides a direct characterisation of surface strings, rather than derive them from some different "underlying" structure. It is also described as monostratal, in that it posits only a single level of (grammatical) representation, in contrast to all Chomskyan revisions of TG, which retain both transformational and base levels. Similar to this, HPSG is often described as monotonic. This is closely parallel to the previous term, but focuses attention on the claim that the information in any linguistic object is cumulative, deriving from various sources (feature-matrices, rules and principles), without any hiatus in the process, such as would be provided by either transformations, or perhaps, separate semantic mappings. When it is said

to be a declarative model, it is asserted to declare what are the permissible associations between constituent strings and information structures, and conversely, not to define procedures, ie. how strings are computed from primitives. This property sets it apart from derivational theories, disallowing such processes as rule-ordering. Finally, it is reversible and un-directional, and thus equally applicable to interpretation or production.

In line with recent trends, HPSG is also modular: feature-matrices, rules, and universal and language specific principles interact to produce the complex surface phenomena of human language communication. See Fodor(1983) for a nice essay addressing this issue.

On the question of the psychological reality of the information structures HPSG posits, its proponents are cautious: they see it on an equal footing with other current theories, in that any psychological claim is a matter for empirical verification, but currently, no such claims are put forward. See the discussion of the notion in Newmeyer(1983:42-47).

I have already drawn attention to the fact that the notion of "head" is central to HPSG, and ought now to explicate this. 1.2.1 will show how the syntactic properties of every constituent are organised under the features, or attributes, HEAD, SUBCAT, AGR, and LEX. To a large degree, intrinsic properties, characterising the categorial nature of the constituent, form a bundle of values for the attribute HEAD (and the combinatorial properties are described within SUBCAT). HPSG includes a principle, the Head Feature Principle (see 1.2.3), drawn from, and in intent, analogous to the Head Feature Convention of GPSG. This principle is designed to ensure that certain features of lexical items (their HEAD features) coincide with the HEAD features associated with the phrasal constituents of which they are heads. Secondly, as will emerge in 1.2.3, the various principles postulated in HPSG are all subsumed by the sign headed-structure[], which also enshrines Head as a central

concept. Thirdly, as I will show in 1.1.4, rules are formulated by means of the attributes HEAD-DAUGHTER and COMPLEMENT-DAUGHTERS, which again centralises the notion. In addition, the attribute SUBCAT sanctions a sign's potential as a head for combination with (a range of) complements, and, as I will develop in following sections, it is in this sense that the model justifies being called Head-driven. For some critical comment on the various problems which arise out of this conception of headedness, see van Valin(1985), Cann(1988) and 2.2.3 below.

It is not my intention to give here a detailed introduction to HPSG or unification grammars generally, as that is done in the works cited above, and in Shieber(1987); readers can refer to these for fuller information. What follows is a brief, account of the model's basic characteristics, yet one which I hope is adequate for the chapters that follow.

1.1.2. The Linguistic Sign.

Drawing on its various contributory formalisms, HPSG construes every grammatical string -- from the lexical level to the sentence -- as an organised bundle of features, which may combine with other similarly organised feature-bundles to yield larger strings. Every string then, (or, from an alternative perspective, every node in a local tree) is a feature structure, or sign. HPSG draws here on the Saussurean concept of sign, with its psychological signifiant and signifié, to explicate this notion, verbalising it in both mentalist and realist terms, about which two approaches Pollard and Sag remain somewhat open. See also Barwise & Perry (1983), and Pollard & Moshier (1988). The basic, simplest signs are the lexical ones, and every sign is itself hierarchically organised, including information about its phonology, its syntax, and its semantics.

Simple partial signs for the English pronoun 'he' and the verb form 'goes' are given below in Attribute-Value Matrix (AVM) format in (1.1) and (1.2) respectively. Features and their

values, or attribute-value pairs will be written in upper case. It is already clear from these two, that construing a category as an organised feature structure has strong implications for the complexity of signs.

(1.1)

[	PHONOLOGY: he]
[	SYNTAX: []
	HEAD: MAJ: N	
	PERSON: 3	
	NUMBER: SING	
	GENDER: MASC	
	CASE: NOM	
[	SEMANTICS: x]

(1.2)

[	PHONOLOGY: goes]
[	SYNTAX: []
	HEAD: []
	MAJ: V	
	VFORM: BASE	
	SUBCAT: <NP _[1] >	
	AGR: []
	PERSON: 3	
	NUMBER: SING	
[	SEMANTICS: []
	CONTENT: []
	RELATION: go	
	ROLE ₁ : [1]	

The organisation of the information in (1.1) is simple enough at this point to be self-explanatory, with the semantics entry specified as an individual variable, x. That is, it is a variable in the predicate-logical sense of standing for an arbitrary individual. I will denote such variables x, y, z.

Some explanation of (1.2) will be helpful. I will not comment here on phonological information; it can be specified according to some particular model, but I will simply follow English and Hadiyya orthographic conventions. See my comment in the note on Phonology, regarding the potential for an isomorphic functional-unificational phonological component.

Syntactic information is organised here into three further

features: HEAD, SUBCAT, and AGR. The HEAD feature contains the further features MAJ(or) and VFORM. The value of MAJ is drawn from the major (word) categories N, V, A, P, Adv, etc, and here has the value V(erb). VFORM further specifies the form of a verbal sign, taking (for English) such values as FIN(ite), BSE(=base), INF(itive), PSP(=past participle), GER(und), and PRP(=present participle); in (1.2) it has the value BSE. Note that following GPSG, VFORM takes the values of the finiteness features, and does not include values for tense, which is held to be a separate head feature taking the value PAST: +/- in line with recent English analyses (See Gazdar 1982). Note also that more recently, Sag & Pollard have advocated handling agreement in the semantics attribute; this will be clarified in 1.2.2.4 and criticised in 3.1.2.5 and 3.2.1.4.

The feature SUBCAT(egorisation) is a stack-valued feature; ie. its value is an ordered list of category-valued features, these representing the complements with which the sign can combine. In (1.2) this lists a single NP_[1], the required grammatical subject of an intransitive verb. The grammatical subject is bottom of the stack, direct object second bottom, indirect object 3rd bottom, and progressively more oblique arguments above that. This follows the work of Dowty(1982a,b). Such recent work in categorial grammar has emphasised that this ordering does not impose a configurational hierarchy of grammatical relations, and HPSG too, stresses this, insisting that it is a hierarchy of syntactic obliqueness.

Since the grammatical subject and the verbal sign will usually correspond in certain AGR(eement) features, the verb-sign feature AGR consists of a listing of further features, which in (1.2) include PER(son), whose value is 3rd, NUM(ber), whose value is SING(ular). In this way, the information is recorded, that a sign 'goes' will combine with one 3rd person singular NP sign which will therefore function as the verb's subject. The symbol NP_[1] is itself an abbreviation for the following partially specified sign:

(1.3)

```

[SYNTAX: [HEAD : MAJ: N]
          [CASE: NOM
          [SUBCAT: < > ]
[SEMANTICS: [1] ]

```

First, notice that SUBCAT not only specifies the major category of the complement, but can also specify, for example its Case requirement. Since only finite VFORMs require a nominative subject in English, only verbal signs which specify FINite will also specify CASE: NOM in the subcategorised-for subject complement.

In (1.3), < > characterises an empty stack, so that SUBCAT< > designates a constituent which has either already combined with all the constituents it was subcategorised for, or is not subcategorised for any constituent. In either case, it has no further complement slots to fill, and is said to be "saturated."

Here, SEMANTICS: [1] is a variable in the more general, and earlier mathematical sense, that it is a parameter of variation, rather than the logical sense noted above. I will denote such variables [1], [2] ...

A fuller sign for (1.2) could be written:

(1.4)

```

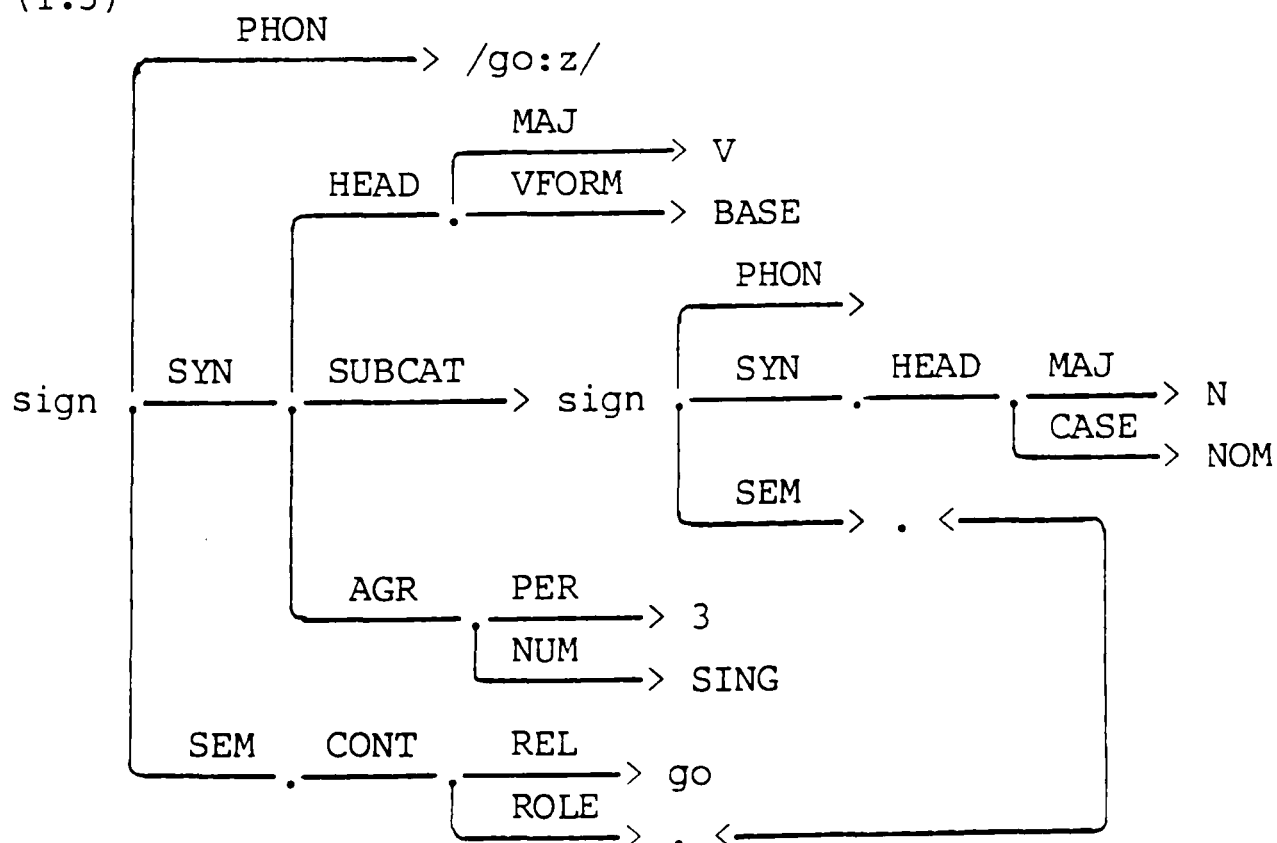
[PHONOLOGY: goes
 SYNTAX: [HEAD: [MAJ: V
                [VFORM: BASE]
            AGR: [PERSON: 3
                [NUMBER: SING]
            SUBCAT: . [SYNTAX: [HEAD: [MAJ: N
                            [CASE: NOM
                            [SUBCAT: < > ]
                            [SEMANTICS: [1] ]
            ]
        ]
 SEMANTICS|CONTENT: [RELATION: go]
                    [ROLE1: [1] ]
]

```

At this point, note that the semantic attribute takes as its value the further attribute CONTENT, and this in turn takes the values RELATION and $ROLE_n$. The value of the CONTENT attribute corresponds to what situation semantics terms a state-of-affairs, or quite closely to what is referred to as logical form in mentalist terms. (Note that the familiar vertical-bar convention represents pathing). RELATION is approximately the extension of the denoted state-of-affairs, and $ROLE_n$ describes the roles which participate in that state of affairs; these might be identified with the θ -roles of GB theory, or even perhaps, with the Case roles of various species of Case Grammar. This is a much-simplified account, which will be described in greater detail in 1.2.1.

It should be obvious that an AVM can be alternatively represented graphically. (1.5) is the graph corresponding to (1.4). The structure-sharing, in which the semantic value of the subcategorised-for sign fulfils the SEM|CONT|ROLE value of the root sign, is strikingly clear. The simple way in which SUBCAT and semantic ROLE interact to achieve "role assignment under subcategorisation", is obvious here, and is one of the distinctives of HPSG.

(1.5)



I include some other partial English signs as further exemplars in (1.6)-(1.9).

(1.6)

Karin tries to be optimistic

[	PHON: tries]
SYN: [	HEAD: MAJ: V]
	SUBCAT: <VP[INF] _[2] , NP _[1] >]
SEM: [	RELATION: try]
	ROLE ₁ : [1]]
	ROLE ₂ : [2]]

(1.7)

Karin seems to be optimistic

[	PHON: seems]
SYN: [	HEAD: MAJ: V]
	SUBCAT: <VP[INF] _[1] , NP>]
SEM: [	RELATION: seem]
	ROLE ₁ : [1]]

(1.8)

Gordon persuades Karin to be optimistic

[	PHON: persuade]
SYN: [	HEAD: MAJ: V]
	SUBCAT: <VP[INF] _[3] , NP _[2] , NP _[1] >]
SEM: [	RELATION: persuade]
	ROLE ₁ : [1]]
	ROLE ₂ : [2]]
	ROLE ₃ : [3]]

(1.9)

Gordon believes Karin to be optimistic

[PHON: believe SYN: [HEAD: MAJ: V SUBCAT: <VP[INF] _[2] , NP, NP _[1] > SEM: [RELATION: believe ROLE ₁ : [1] ROLE ₂ : [2]]]
---	---	---

Note how the various syntactic complements listed in SUBCAT are co-indexed with semantic ROLE values. This is elaborated on in the following section.

1.1.3 Unification.

Signs such as (1.1) and (1.2) above combine via the mathematical operation of unification to yield larger signs. In essence this requires that the partial information associated with each of the (two) constituent parts of a linguistic construction, overlay, or combine, to yield all the information necessarily associated with the single larger construction. I will define unification more formally in 1.2.3.

For example, the English pronoun 'he' is associated with the partial information given somewhat informally as

(1.10)

[PHON: he SYN: [PERSON : 3 NUMBER : SING GENDER : MASC CASE : NOM SEM|CONT: x]]
---	---	---

and a verb form such as 'goes'

is associated with the partial (agreement) information below:

(1.11)

$$\left[\begin{array}{l} \text{PHON: goes} \\ \text{SYN|AGR: } \left[\begin{array}{l} \text{PERSON : 3} \\ \text{NUMBER : SING} \\ \text{CASE : NOM} \end{array} \right] \\ \text{SEM|CONT: } \left[\begin{array}{l} \text{REL: go} \\ \text{ROLE: [1]} \end{array} \right] \end{array} \right]$$

In a unification yielding the sentence 'he goes', these two pieces of information must be able to combine successfully: that is, they must be compatible. For the signs for 'he' and 'goes' this is intuitively clear, and results in the sign in (1.12). The AGR attribute of the verbal sign requires a (pro)nominal sign, to meet the specified values of the PERSON, NUMBER and CASE attributes, but makes no requirement of the attribute GENDER.

(1.12)

$$\left[\begin{array}{l} \text{PHON: he goes} \\ \text{SYN|AGR: } \left[\begin{array}{l} \text{PERSON: 3} \\ \text{NUMBER: SING} \\ \text{CASE : NOM} \end{array} \right] \\ \text{SEM|CONT: } \left[\begin{array}{l} \text{REL: go} \\ \text{ROLE}_1: x \end{array} \right] \end{array} \right]$$

In this example, the AGREement information associated with the verb is a proper sub-set of the syntactic information associated with the pronoun, and unification will succeed. In the case of the sign 'Karin', the proper noun is associated with the partial information in (1.13).

(1.13)

PHON:	Karin								
SYN:	<table border="0"> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">PERSON :</td> <td>3</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">NUMBER :</td> <td>SING</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">GENDER :</td> <td>FEM</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">...</td> <td></td> </tr> </table>	PERSON :	3	NUMBER :	SING	GENDER :	FEM	...	
PERSON :	3								
NUMBER :	SING								
GENDER :	FEM								
...									
SEM CONT REL:	Karin								

In the unified grammatical structure 'Karin goes', the noun phrase and the verb contribute the non-redundant information concerning person and number; neither the GENDER specification FEM on the noun phrase sign, nor the CASE specification NOM on the verbal sign contribute to the unification. Nor of course, do these additional information-features clash. Again, intuitively, unification will proceed successfully as in (1.14).

(1.14)

PHON:	Karin goes				
SYN AGR:	<table border="0"> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">PERSON:</td> <td>3</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">NUMBER:</td> <td>SING</td> </tr> </table>	PERSON:	3	NUMBER:	SING
PERSON:	3				
NUMBER:	SING				
SEM CONT:	<table border="0"> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">REL:</td> <td>go</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">ROLE₁:</td> <td>Karin</td> </tr> </table>	REL:	go	ROLE ₁ :	Karin
REL:	go				
ROLE ₁ :	Karin				

A clash of contradictory information causes unification to fail. Thus, for example, the pronoun sign 'I',

(1.15)

PHON:	I						
SYN:	<table border="0"> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">PERSON :</td> <td>1</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">NUMBER :</td> <td>SING</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">CASE :</td> <td>NOM</td> </tr> </table>	PERSON :	1	NUMBER :	SING	CASE :	NOM
PERSON :	1						
NUMBER :	SING						
CASE :	NOM						

will fail to unify with the sign

'goes': this is because the information under PERSON in the two signs is contradictory.

Look now more closely at the way in which the SUBCAT feature

participates in unification, and interacts with the SEMANTICS|CONTENT|ROLE value.

Recall that in (1.2), the verbal sign 'goes' contained the subcat specification SYNTAX|SUBCAT:<NP_[1]>, that this signifies that the verbal sign requires to combine with an NP sign, and that NP_[1] is abbreviatory for the partial information

(1.16)

$$\left[\begin{array}{l} \text{SYNTAX: } \left[\begin{array}{l} \text{HEAD: MAJ: N} \\ \text{SUBCAT: } < > \end{array} \right] \\ \text{SEMANTICS: } [1] \end{array} \right]$$

Thus (1.2) was more fully specified as (1.4), repeated below.

(1.17)

$$\left[\begin{array}{l} \text{PHONOLOGY: goes} \\ \text{SYNTAX: } \left[\begin{array}{l} \text{HEAD: } \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: BASE} \end{array} \right] \\ \text{AGR: } \left[\begin{array}{l} \text{PER: 3} \\ \text{NUM: SING} \end{array} \right] \\ \text{SUBCAT: } \left\{ \begin{array}{l} \left[\begin{array}{l} \text{SYNTAX: } \left[\begin{array}{l} \text{HEAD: } \left[\begin{array}{l} \text{MAJ: N} \\ \text{CASE: NOM} \end{array} \right] \\ \text{SUBCAT: } < > \end{array} \right] \\ \text{SEMANTICS: } [1] \end{array} \right] \\ \left[\begin{array}{l} \text{SEMANTICS|CONTENT: } \left[\begin{array}{l} \text{RELATION: go} \\ \text{ROLE}_1 : [1] \end{array} \right] \end{array} \right] \end{array} \right. \end{array} \right] \end{array} \right]$$

When such a sign unifies with an NP whose feature structure satisfies the requirements of the subcategorised-for complement, the complement sign is first cancelled from SUBCAT.

Note also that the semantics attribute of this sign has the value SEM|CONT|ROLE₁: [1], which is the index that the subcategorised-for category also carries. This dual occurrence of the indexing symbol [1] in the subcategorised-for NP and in the semantics attribute of the verbal sign that contains it, is the means of ensuring that in any unification, the semantics of

the subcategorised-for NP will be associated with the correct SEMANTIC|ROLE value of the verbal sign. The semantics of the resulting linguistic construct will be defined by the RELATION value 'go' and the $ROLE_1$ value of the semantics of the NP sign. In other words, the unification (i) cancels the -subcategorisation requirement of the head sign, (ii) unifies the semantics of the complement into the correct SEMANTIC|ROLE of the head sign, and (iii) concatenates the phonological content of the two signs. Notice that the syntactic features of the complement also have to be compatible with the AGR value on the verbal sign. The resulting phrasal sign is shown in (1.18), in which x represents whatever variable value is adopted for the pronoun 'he.' The abbreviatory notation $NP_{[1]}$, then is to be interpreted to refer to the semantic attribute value, [1], of the NP sign.

(1.18)

PHONOLOGY: he goes	
SYNTAX:	HEAD: [MAJ: V
	VFORM: BASE]
	SUBCAT: < >
	AGR: [PERSON: 3
	NUMBER: SING
	CASE : NOM]
SEMANTICS|CONTENT: [RELATION: go]	
	ROLE ₁ : x]

This will serve to explicate the notion of unification for now; it will be dealt with in more detail in 1.2.2. below.

1.1.4. Rules.

So much for the sign, and a brief look at the unification operation. A grammar must also contain rules, which constrain the permissible constituent relationships of signs.

Informally, rules might be written as

(1.19) Rule 1.
 [SUBCAT<>] ---> H[LEX-], C

Thus (1.19) is the HPSG analogue of a PS rule of the form $XP \rightarrow H, C$, where H is phrasal, not lexical, and without identifying the linearity of the two daughters. It therefore subsumes such rules as

(1.20)
 S ---> NP VP
 NP ---> Pos N
 NP ---> Det N'

Being a saturated sign, (1.19) above does not subsume VP expansion rules, whose head daughter V is unsaturated, requiring unification with further NP(s) as listed in its subcat stack. This requires a second rule,

(1.21) Rule 2.
 [SUBCAT<[]>] ---> H[LEX], C*

It is thus analogous to such rules as

(1.22)
 VP ---> V VP ---> V, VP VP ---> V, NP, NP
 VP ---> V, NP VP ---> V, S' VP ---> V, PP
 PP ---> P, NP
 etc.

Neither of these Rules covers adjuncts of course, only complements.

The HPSG analogue of PS rules is more formally written in the format of the signs themselves, ie, as partial information structures with sets of feature-value pairs. As has been stated, the rule is a constraint on the possible mother-daughter relationship, and uses features such as DTRS (daughters), HEAD-DTR (head-daughter), and COMP-DTRS (complement-daughters),

as illustrated in the following restated Rules 1 and 2 of English, in (1.23) and (1.24) respectively.

(1.23) Rule 1. Informally, [SUBCAT<>] ---> H[LEX], C

$$\left[\begin{array}{l} \text{SYNTAX|LOCAL|SUBCAT: } < > \\ \text{DTRS: } \left[\begin{array}{l} \text{HEAD-DTR|SYNTAX|LOCAL: } \left[\begin{array}{l} \text{HEAD|INV: -} \\ \text{LEX: -} \end{array} \right] \\ \text{COMP-DTRS: } < [] > \end{array} \right] \end{array} \right]$$

The attribute SYNTAX|LOCAL|SUBCAT:< > symbolises a sign with an empty SUBCAT stack (recall that the notation < > signifies an empty stack), and <[]> symbolises a stack containing a single (category-valued) member, so that the sign in (1.23) comprises a single complement daughter. The DTRS attribute incorporates the constituent structure of the rule, as HEAD-DTR and COMP-DTRS. In essence, then, this rule specifies that one of the possible signs in English is a saturated sign, with constituent parts consisting of a head-daughter HEAD-DTR, and a complement COMP-DTRS. The HEAD-DTR is (LEX:-), and hence is a phrasal sign, and also has the head feature [INV:-], signifying that no "subject-auxiliary inversion" is operative.

VP expansion rules are subsumed by the following unsaturated phrasal sign.

(1.24) Rule 2. Informally, [SUBCAT<[]>] ---> H[LEX], C*

$$\left[\begin{array}{l} \text{SYNTAX|LOCAL: } \left[\begin{array}{l} \text{SUBCAT: } < [] > \\ \text{LEX: -} \end{array} \right] \\ \text{DTRS: } \left[\begin{array}{l} \text{HEAD-DTR|SYNTAX|LOCAL: } \left[\begin{array}{l} \text{HEAD|INV: -} \\ \text{LEX: +} \end{array} \right] \\ \text{COMP-DTRS: } < \dots [] > \end{array} \right] \end{array} \right]$$

The value SUBCAT:<[]> for the feature SYNTAX|LOCAL|SUBCAT identifies this as an unsaturated sign which can combine with a single constituent (eg. a 'VP' type constituent requiring a

subject NP), and which has itself resulted from unification of a lexical head daughter and at least one complement daughter.

So-called "Subject-Aux-Inversion" is covered by a third rule, thus:

(1.25) Rule 3. [SUBCAT< >] --- > H[INV +, LEX +], C*

$$\left[\begin{array}{l} \text{SYN} | \text{LOC} | \text{SUBCAT: } < > \\ \text{DTRS} | \text{HEAD-DTR} | \text{SYN} | \text{LOC: } \left[\begin{array}{l} \text{HEAD} | \text{INV: } + \\ \text{LEX: } + \end{array} \right] \end{array} \right]$$

[INV: +] marks all auxiliary verbs which can precede their subject, as 'did' in 'Did Shona appeal for clemency?', and the rule handles such strings by parsing as follows:

(1.26) $\begin{matrix} & \text{[Did]} & \text{[Shona]} & \text{[appeal for clemency?]} \\ & \text{H} & \text{C}_2 & \text{C}_1 \end{matrix}$

I will return to a further consideration of rule application in section 1.2.

1.1.5. Linearisation.

In the earliest work on Head Grammars, rules were held to encode specific linear orders -- see Pollard(1984:11), for example -- although he also defined a Wrap operation, after Bach(1981). This was revised in later work, to follow the separation of dominance and precedence relations first proposed by Gazdar & Pullum(1982) and adopted in GKPS(1985).

Sag(1986) introduced into HPSG Linear Precedence (LP) rules which constrained linearisation separately. LP is a constraint of the form $A < B$; read "A precedes B". The first LP rule for English is formulated as $[\text{SUBCAT}] < \sim[\text{SUBCAT}]$ in GPSG, viz., that lexical (subcategorising) categories precede all phrasal (non-subcategorising) sisters. Sag reformulates this as

(1.27)

LP1: HEAD[LEX:+] < {COMPLEMENTS, ADJUNCTS}

ie. a lexical head linearly precedes all its
complement and adjunct sisters.

Note that GPSG did not subcategorise for grammatical subject, so that subject NPs were excluded from the domain of operation of that LP rule. If in HPSG a head sign does subcategorise for its grammatical subject, as explained in 1.1.2 above, then the HPSG formulation LP1 is not a simple analogue of the GPSG rule. If we adopt Borsley's (1987, 1988) suggestion that the grammatical subject be handled by the separate attribute SUBJ, LP1 would become directly analogous to the GPSG rule.

In noting that ordering relations in English not only constrained linearity among sister constituents, but in some cases also required reference to the obliqueness of certain grammatical relations, Sag sought to improve the ID/LP theory of GPSG. From the ordered list of complement sisters in a sign's SUBCAT stack, Sag constructs a linear grammatical hierarchy, such that complements lower on the SUBCAT stack are higher on this hierarchy. Non-complement constituents, or adjuncts, are lowest of all in the hierarchy. Some LP relationships, Sag claims, require that A-type constituents precede B-type constituents only if A is higher than B on this grammatical hierarchy; ie. if A is less oblique, or lower on the SUBCAT stack. This kind of LP relationship he formalises as $A \ll B$, of which he comments "hierarchical LP rules will have the effect of ordering a daughter only with respect to its sisters that are lower on the grammatical hierarchy." (op.cit:28). He then formulates LP2 as follows:

(1.28)

LP2: COMPLEMENT[HEAD|MAJ: ~V] << X[LEX: -]

ie. all complements which are not of major category V (ie VPs and Ss) precede more oblique phrasal categories.

This is more restrictive than its more familiar GPSG formulation $NP < PP, AP, VP$, in that (i) it only affects complements that are neither VP nor S, and (ii) it ensures that the first NP of two is the less oblique; eg. that the direct object precedes O_2 in English.

In this formulation of LP, Sag has created a mechanism which is apparently powerful enough to achieve all the benefits the ID/LP format of GPSG achieved, and flexible enough to meet the limitations which have been exposed in the latter. (See Jacobson, 1983, Pollard, 1984, Sag, 1986).

Sag's LP constraints are applied via a concatenation operation which is specified within the phonological attribute of the rules:

(1.29) Rule 1.

$$\left[\begin{array}{l} \text{PHONOLOGICAL: concat}(2,1) \\ \text{SYNTAX|LOCAL|SUBCAT: } < > \\ \text{DTRS: } \left[\begin{array}{l} \text{HEAD-DTR: } \left[\begin{array}{l} \text{PHONOLOGY:[1]} \\ \text{SYNTAX|LOCAL: } \left[\begin{array}{l} \text{HEAD|INV: -} \\ \text{LEX: -} \end{array} \right] \end{array} \right] \\ \text{COMP-DTRS: } < [\text{PHONOLOGY:[2]}] > \end{array} \right] \end{array} \right]$$

The application of this is fairly obvious, requiring that when a head and a complement unify via this rule, the phonology of the complement precedes that of the head. Note that PHON: [1], etc., is to be interpreted to mean "the value of the attribute PHON." For criticism of this mechanism, see 3.1.2.4 below.

For the sake of completeness, note that Pollard & Sag(1987:178, 188) also propose approximately formulated LP constraints to deal with ordering in focus constructions, and the filler in filler-gap dependencies, such as those in (1.30).

(1.30)

- a. Kim [put[on the table][the book he bought in Vienna]]
- b. (focus-NP), LP3:
[MAJ: ~N] < [FOCUS: +]
- c. [Which problems][did you explain ... to the students?]
- d. (filler-dependency), LP4:
FILLER < HEAD[LEX: -]

1.2. HPSG: FURTHER DISCUSSION.

In this section of the chapter, I will look in more detail at the organisation of the partial information in the linguistic sign in 1.2.1, then, in 1.2.2 at unification via an algorithm introduced in the earlier work by Pollard. 1.2.3 will consider the Principles which HPSG incorporates, and show how these integrate with the Rules, finally dealing with rule application in the declarative terms in which the model is now framed. Following that, in 1.2.4 I will show briefly how HPSG proposes organising the lexicon.

1.2.1. The Linguistic Sign.

Consider now a more detailed lexical sign, this time for the verb sign 'broke'.

(1.31)

PHONOLOGY: broke	
SYNTAX:	LOCAL: HEAD: MAJ: V
	VFORM: FIN
	AUX: -
	INV: -
	AGR:
	SUBCAT: <NP _[1] , NP _[2] >
	LEX: +
BINDING:	SLASH: <...>
	QUE: <...>
	REL: <...>
SEMANTICS:	CONTENT: RELATION: break
	ROLE ₁ : [2]
	ROLE ₂ : [1]
	...
	ROLE _n :
	LOCATION: [3]
	POLARITY:
	REFERENCE- VARIABLE: [3]
	MARKERS : RESTRICTION: REL: < >
	ARG ₁ : [3]
	ARG ₂ : 1 _d
	QUANTIFIER-STORE: {...}
	REFLEXIVE-STORE: {...}

First let me make a notational point: when the value of an attribute is given as [1], [2], ..., this is to be interpreted as saying that some feature structure is abbreviated as [1], [2] etc. When a similar tag follows and is subscripted to some sign, as in NP_[1], it is to be interpreted to refer to the SEMANTIC attribute of the sign which is suffixed and subscripted.

1.2.1.1. The SYNTAX attribute.

Looking first at the structure of the syntactic information, notice that this is now divided first into LOCAL and BINDING.

Local features identify the intrinsic and combinatorial properties of the sign. In (1.31) the local head features (formalised SYNTAX|LOCAL|HEAD) identify 'broke' as a FINite main (ie. -AUX) verb which combines with two NP arguments as noted in the SUBCAT entry, in which NP_[1] and NP_[2] designate the grammatical object and subject respectively. The attribute-value LEX:+ characterises the sign as lexical rather than phrasal. Versions of extended Montague grammar generally do not distinguish lexical from phrasal strings, although Cann(1987:12f) points out how a lexicality feature can be useful in obviating the problem of redundant, non-branching nodes in X-bar syntax. A justification of the attribute in HPSG is promised for Pollard & Sag (forthcoming).

The remaining attribute, BINDING, or SYNTAX|BIND'G subsumes three attributes which take category-valued fillers, and it corresponds to the FOOT features of GPSG. BINDing handles filler-gap dependencies, and its operation will be explained below, 1.2.2.3.

Rather than treat the grammatical subject as a complement which is subcategorised-for within SUBCAT, Borsley(1987) has advocated following later GPSG in using a separate attribute SUBJ(ect) to inform the sign about its subject, and otherwise remove it from final position on the SUBCAT stack. He adduces several points of (English-specific) evidence in support of this, but this does not seem to me to be conclusive, and it would be premature to reach a decision, especially one with cross-linguistic import. Nevertheless I will return to his suggestion in 3.1.2.2, and in Chapter 6.

Note also that Sag(1986) sets up a feature ADJ(uncts) to handle optional constituents, and suggests (op.cit:27) that further constituent complexity will likely be required to handle optional complements. The trend in all this is obvious -- a proliferation of constituent categories. For a configurational language at least, this all remains to be argued through; an alternative solution is given in Pollard & Sag (1987), and the

issue will be discussed for a moderately W* language like Hadiyya, in 3.1.2.3.

Following Pollard & Sag(1988), HPSG has put forward the suggestion that AGR features should be treated in the semantic rather than syntactic attribute, as described in (1.31), but I will defer discussion of this until 1.2.2.4.

1.2.1.2. Situation Semantics.

The semantic information in (1.31) follows the approach of Barwise & Perry(1983), and Fenstad et al(1985) [which latter I have unfortunately been unable to refer to], in keeping with recent work in HPSG; the model could organise semantic information according to a variety of model-theoretic approaches, and indeed, Pollard(1984) employed Montagovian intensional semantics. The change is noted in Pollard(1985)³, with the claim that it represented a move to a theory more in line with real-world semantics. Certainly Barwise & Perry(1983) view their theory of situation semantics as being able to bridge the gap between the two major and opposing camps of recent semantic-theoretic work -- those of speech acts and truth-conditional semantics. They contend that work which is guided by Frege's decision to use truth-values as the reference of statements has crucially failed to distinguish between the interpretation of a statement and its evaluation as true/false. This does seem to pinpoint a major weakness of truth-conditional semantics, and deserves more attention.

Situation Semantics is also a realist theory, and thereby somewhat unconventional, with mentalist approaches having dominated since the years following Chomsky(1957). Some comment on this point is made in Pollard(1985:1), Sag & Pollard(1987:8), and Pollard & Sag (1987:1f, 87), where it is insisted that the difference is less divergent than it is sometimes asserted to

3. This was foreshadowed in GKPS(1985:83), in which situation semantics was acknowledged as one of several "important recent innovations."

be, and that the two approaches are not necessarily in confrontation. Whether an attempt at synthesis is the best way forward in this controversy, however, is debatable. Certainly situation semantics has engendered its full share of criticism: see J.D. Fodor(1985), Partee(1985), J.A. Fodor(1988), and van Benthem(1985), among others. And yet, when all is said and done, it seems indisputable that human cognition involves both a realist and a conceptionalist or mentalist side. It makes sense that the external world and our conceptions of it are to a high degree isomorphic, that our conceptions are based on real objects and goings-on, and yet, that we can also conceptualise in the abstract, in a predictive, or creative way. If one were about to create a universe inhabited by sentient beings, such a framework would seem to form an eminently suitable one.

My own reasons for adopting situation semantics here are quite simple: First, I have chosen to follow that framework to which HPSG has devoted most attention; secondly, my concern for the above-mentioned weakness of truth-conditional semantics, combined with the fairly transparent modelling of situation semantics leads me to a pragmatic decision to use the latter in this thesis. This decision is strengthened by reference to the scope and focus of the study, already rather wide (see Preface).

It is impossible to give any full introduction to situation semantics, for which see Barwise & Perry(op.cit), or to detail its application in HPSG, for which see Pollard & Sag(1987:81-112), and the following is only intended as a working summary.

Situation semantics starts with the assumption that, from the aspect of human perception of it, the world consists of individuals and relations. Roughly, individuals are the things, entities, objects which are in the world, such as Margaret Thatcher, the Scott Monument, the moon, cheese, quarks, daffodils, and whatever... Relations are (roughly) the goings-on in the world, in which individuals can be participators. Relations include such goings-on as being fat, being Prime

Minister, loving, giving, running, etc. Note here that properties (for example, being fat) are subsumed under relations.

In HPSG, the starting point is that every lexical sign includes a semantic attribute, `RELATION`. This attribute takes as values such goings-on as being fat, being a donkey, loving, giving, etc; so that properties as well as events, activities, and processes are handled as relations. As we shall see below, even names will be interpreted as having the relation of being Karin, etc.

One important property of relations is that they vary in the number of different things, or individuals, that can get involved in them. The arity of a relation refers to the characteristic number of participating individuals. Unary relations have one participant, and include being a donkey, running, dying etc. Binary relations include reading, loving, being the mother of, being on top of, etc. Ternary relations include giving, receiving, putting, persuading, etc.

A second important property of relations is the way in which objects participate in them. The two participants in loving, for example are in the roles of lover and loved; the three participants in giving are in the roles of giver, given thing, and receiver. The single role of a unary relation like being a donkey, is fulfilled by some individual donkey, and is given the specific role-name `INST(ANCE)`.

The attribute `ROLEn` is variously named in the different HPSG work cited. Sometimes verb-specific role-names are used, such as `DEVOURER` and `DEVoured` for the verb 'devour' (Sag & Pollard 1987:15f); on the other side, Pollard(1985:7 etc) and (1988:6) use Case roles such as Agent and Patient, but without making any theoretical point, I suggest; and Sag(1986:8) [also Pollard 1988:2] uses `ARG(ument)`, while footnoting his concurrence with the verb-specific roles most generally adopted. One can sympathise with every attempt to side-step the morass of deep-Case Roles, and also with the recognition that the roles

associated with a verb are often highly specific, but this leaves us without any cross-lexical generalisation whatsoever. Rather than opt for either verb-specific, keyword labels for attributes, or deep Case roles, I will employ $ROLE_n$ as an attribute-set throughout this work. An advantage in doing this will emerge in 3.1.2.2. Deep-Case roles such as Agent and Patient might profitably form a part of the lexical inheritance hierarchy, see 1.2.4, and the verb-specificity too is primarily a lexical matter, arising out of the semantics of each verbal entry.

1.2.1.3. The SEMANTIC attribute.

SEMANTICS as currently organised in HPSG, consists of a CONTENTS attribute (which gives information about intrinsic properties of meaning), the attribute REFERENCE-MARKERS (which informs about such contextually anchored parameters as spatio-temporal location), and the two attributes QUANTIFIER-STORE and REFLEXIVE-STORE for handling quantified and reflexivised strings respectively, via the sorts of devices known as Cooper-storage (Cooper, 1983). About these latter two attributes I shall have nothing further to say.

The CONTENTS attribute specifies the intrinsic properties of RELATION (which characterises the logical-form meaning), various $ROLE_n$ values (which characterise the logical-form contribution of the various associated arguments), LOCATION (which identifies spatio-temporal location), and POLARITY. Here I use 'logical-form' in the sense of that part of the grammar which is input to propositional interpretation, rather than in the sense of a formulation which lays bare the logical properties of a sentence, and which is 'hidden' by the syntax and the 'non-logical' words. ie. not as a formalism intended to capture the perceived truth-conditions of a statement. See Barwise & Perry(1983:134).

In (1.31), 'broke' has the "meaning" SEMANTICS|CONTENT|RELATION: breaking, with indexed roles [2] and [1] (= subject and object respectively, which are cross-indexed with SYNTAX|LOCAL|SUBCAT),

and LOCATION: [3] which cross-indexes with the REFERENCE-MARKER ARG₁ value. ARG₂: l_d refers to the spatio-temporal location of the discourse, location ^{discourse}. The further elaboration of these lies outwith the scope of this work, and I will make no further mention of them.

To say that the sign for /broke/ "means 'breaking'" is hardly an interesting semantics! We can express it more strictly by saying that the sign /broke/ restricts the parameter SEMANTICS|CONTENT|RELATION to situations in which there is a breaking. This is much closer to a statement in intensional semantics terms, in which the intension of the predicate 'break' is a function (break')(x,y) which defines for any possible world, the set of individuals \underline{x} which 'break' the set of individuals \underline{y} in that world. Alternatively: The set of individuals \underline{x} and the set of individuals \underline{y} are in a relation of breaking... the intension break' is the function that associates with each world which pair of elements \underline{x} and \underline{y} the predicate is true of in that world. Recall that Pollard(1984) and (1985) are framed in intensional logic.

Turn now to look at the semantic content value for a sign whose syntactic category is N. The semantic content of a proper noun sign has been given without comment as (1.13), repeated here as (1.32).

(1.32)

$$\left[\begin{array}{l} \text{PHON: Karin} \\ \text{SYN|LOC: } \left[\begin{array}{l} \text{HEAD: } \left[\begin{array}{l} \text{MAJ: N} \\ \text{NFORM: NORM} \end{array} \right] \\ \text{SUBCAT: } < > \end{array} \right] \\ \text{SEM|CONT|REL: Karin} \end{array} \right]$$

This treats the individual as an individual constant, in standard logic terms. That is, /Karin/ "means" the individual named Karin. The real world is more complex, however -- Karin does not uniquely refer to a single individual, and what is really needed here is to treat a named individual as a restricted

parameter, that is, /Karin/ is restricted to the collection of individuals named Karin. In other words, we recognise /Karin/ to be an indexical expression, and revise (1.32) to include a new attribute, IND(EX), whose value describes the restricted variable that /Karin/ is applied to in terms of the further attributes VAR(IABLE) and RESTR(ITION). Thus:

(1.33)

PHON: [2] Karin SYN LOC: [<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;"> HEAD: [<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">MAJ: N</td> <td style="padding: 5px;">NFORM: NORM</td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">SUBCAT: < ></td> <td></td> </tr> </table> </td> <td style="padding: 5px;">]</td> </tr> </table>	HEAD: [<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">MAJ: N</td> <td style="padding: 5px;">NFORM: NORM</td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">SUBCAT: < ></td> <td></td> </tr> </table>	MAJ: N	NFORM: NORM	SUBCAT: < >]	SEM CONT IND: [<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">VAR: [1]</td> <td style="padding: 5px;">RESTR: [<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">REL: naming</td> <td style="padding: 5px;">NAME: [2]</td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">NAMED: [1]</td> <td></td> </tr> </table> </td> </tr> </table>	VAR: [1]	RESTR: [<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">REL: naming</td> <td style="padding: 5px;">NAME: [2]</td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">NAMED: [1]</td> <td></td> </tr> </table>	REL: naming	NAME: [2]	NAMED: [1]	
HEAD: [<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">MAJ: N</td> <td style="padding: 5px;">NFORM: NORM</td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">SUBCAT: < ></td> <td></td> </tr> </table>	MAJ: N	NFORM: NORM	SUBCAT: < >]								
MAJ: N	NFORM: NORM												
SUBCAT: < >													
VAR: [1]	RESTR: [<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">REL: naming</td> <td style="padding: 5px;">NAME: [2]</td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">NAMED: [1]</td> <td></td> </tr> </table>	REL: naming	NAME: [2]	NAMED: [1]									
REL: naming	NAME: [2]												
NAMED: [1]													

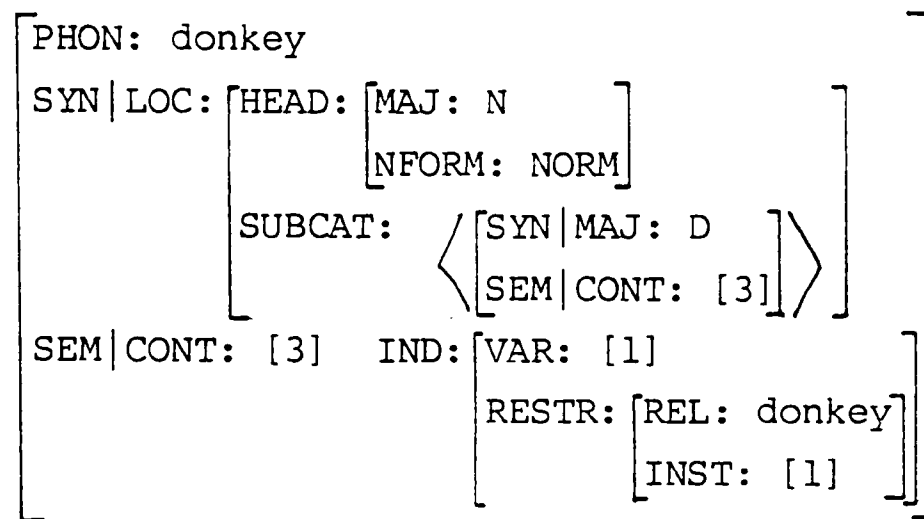
] |

ie. the sign /Karin/ restricts the parameter RELATION to situations in which /Karin/ is a name used in naming some individual variable, Karin.

Notice that the structure sharing tags [2] tie the phonological value to the value of the attribute NAME; and similarly, the tag [1] ties the individual named to the parameter of variation, VAR, that is, ties the name 'Karin' to the individual variable concerned.

Consider a further example, a common noun such as 'donkey.' Following the treatment just developed, this can be described by the following sign.

(1.34)



Several points require explanation here. First, notice that Pollard and Sag subcategorise common nouns for the determiners they combine with, such as 'every', 'some', etc. [They generalise DET to include a full range of terms; Pollard & Sag(1987:88)]. Secondly, note that the unary role associated with the relation 'being a donkey' is called INST(ance), as mentioned in 1.2.1.2. Thirdly, the tag [3] ensures that the semantic contents of a subcategorised-for determiner is unified into the SEM|CONT attribute of the common noun head-sign. [See Pollard & Sag, 1987:107, for their preferred treatment].

The above sign is to be interpreted as follows:

(1.35)

/donkey/ restricts the parameterised relation to situations in which an individual is an instance of the relation 'being a donkey.'

This does not yet consider quantified NPs, and indeed this is well outside the scope of the present work. It is an issue to which semanticists have devoted much effort in recent years, and as yet no really satisfying consensus has been reached. Since it is not in focus in this thesis, I make only this brief mention. See the short treatment in Pollard(1985:11-15) and Pollard & Sag(1987:107-112).



1.2.1.4. Structure-sharing.

It has already been noted that signs in HPSG are conceptualised as partial information structures, in which information is described by the values taken by an organised bundle of attributes. The properties of these structures result in their ability to handle complex information, and so enrich their capacity as constructs of natural language modelling: this especially concerns their potential for recursive embedding, and for structure-sharing.

In recursive embedding, the value of some attribute may be another information structure with internal complexity of its own. So, for example, one of the values the attribute SYNTAX may adopt is LOCAL; LOCAL in turn takes values HEAD, SUBCAT and LEX, of which the two former can themselves take yet further attributes as values. SUBCAT, for example, embeds other complete signs, both lexical and phrasal. In (1.36), for example, the lexical sign for 'persuade' through its SUBCAT attribute embeds a VP[INF] as well as two NP signs.

(1.36)

$$\left[\begin{array}{l} \text{PHON : persuade} \\ \text{SYN|LOCAL:} \left[\begin{array}{l} \text{HEAD: MAJ: V} \\ \text{SUBCAT } \langle \text{VP[INF]}, \text{NP}, \text{NP} \rangle \end{array} \right] \end{array} \right]$$

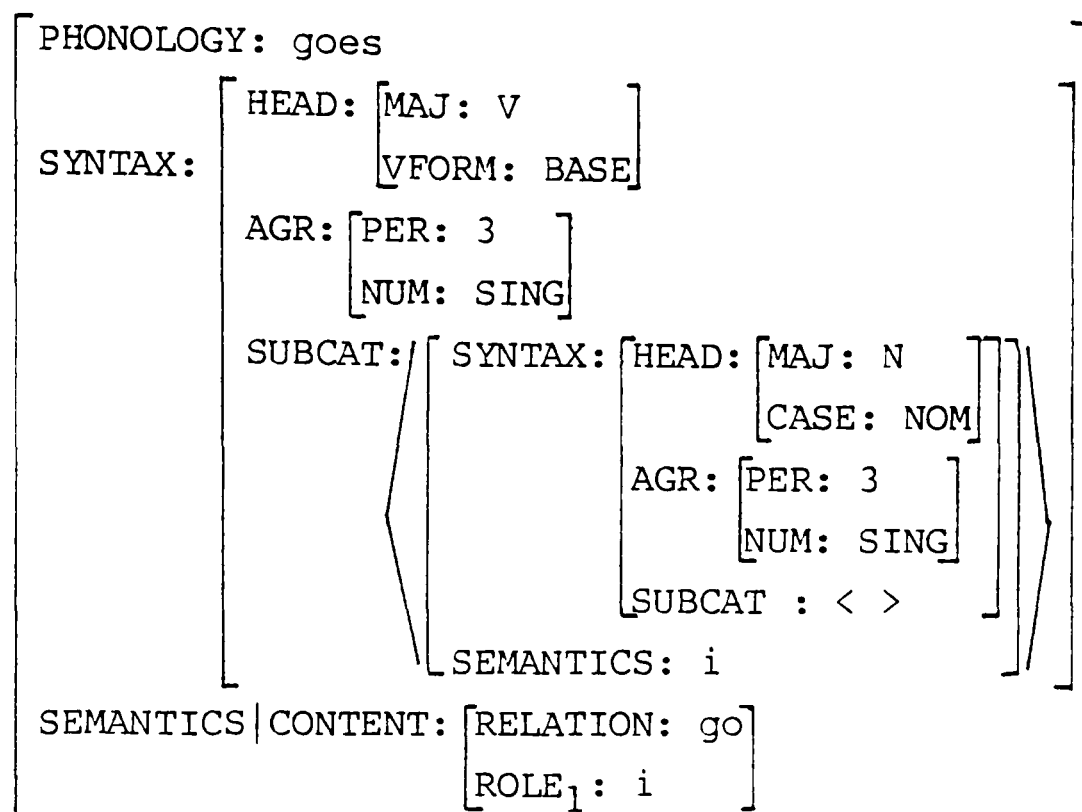
Here VP[INF] abbreviates a sign such as

(1.37)

$$\left[\begin{array}{l} \text{SYN|LOCAL} \left[\begin{array}{l} \text{HEAD:} \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: INF} \end{array} \right] \\ \text{SUBCAT } \langle \dots, \text{NP} \rangle \end{array} \right] \end{array} \right]$$

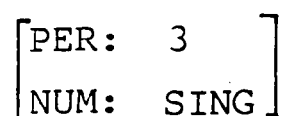
In structure-sharing, two (or more) distinct attributes have as their value a single other structure. This is exemplified in (1.38).

(1.38)



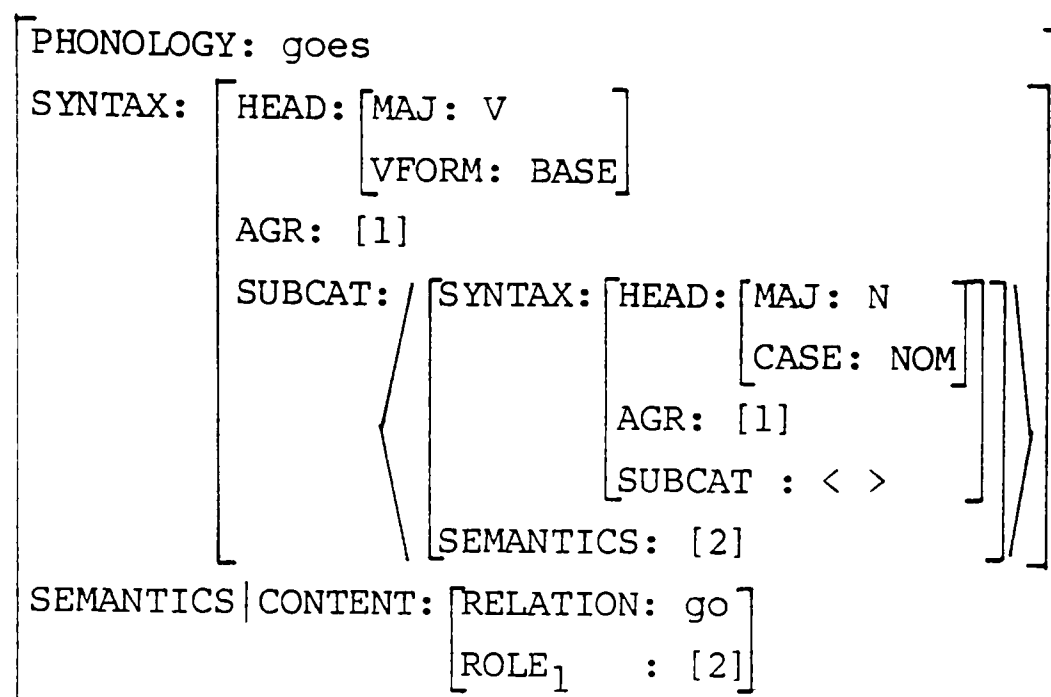
Structure-sharing is seen in this sign, first in specifying that the semantics of the subcategorised-for NP, and the SEM|ROLE₁ of the full sign, both take the same parameter of variation, i. Secondly, note that the the AGR values of both the full sign and its subcategorised-for NP are both specified as containing the same sub-structure, (1.39).

(1.39)



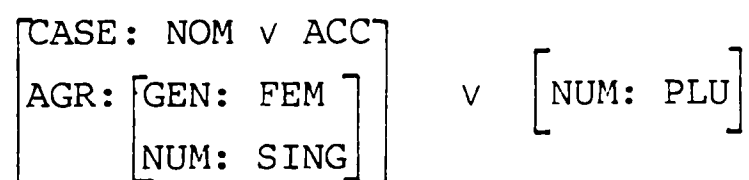
With these things in mind, the sign (1.38) can be reduced to the following, (1.40), in which the PERSON, NUMBER and GENDER attributes are subsumed in AGR: [1]. CASE is not an agreement feature; cross-linguistically, pronouns and their antecedents agree in person, number and gender, but not in Case; this might be cited as one piece of evidence that AGR be handled within the semantic attribute; see 1.2.2.4.

(1.40)



It is convenient to consider a further matter here too. Pollard & Sag(1987:40ff) extend the properties of a unificational grammar to allow partial signs to be related by the formal operations of predicate logic. Thus feature structures can be either conjoined, disjoined, negated, or related by material implication. Logical-& conjunction of signs is a straightforward augmentation, since any feature structure is simply a conjoining of compatible attribute-value pairs. The application of disjunction, \vee , is more useful, in that it is fairly common to find a linguistic restriction "either A or B". The German article form die, for example, is either the feminine singular of Nominative or Accusative, or it is a plural. Employing sign disjunctions, its lexical entry might be partially represented as in (1.41).

(1.41)



Similarly, if we know of some sign whose agreement is not 3rd person singular, this information might be recorded disjunctively as follows.

(1.42)

$$\begin{array}{ccccc} \text{[NUM: PLU]} & & \vee & & \text{[PER: 1]} & & \vee & & \text{[PER: 2]} \\ \text{agr-value} & & & & \text{agr-value} & & & & \text{agr-value} \\ & & & & \text{[NUM: SING]} & & & & \text{[NUM: SING]} \end{array}$$

But the same information can be more succinctly described by a negation:

(1.43)

$$\neg \begin{array}{c} \text{[PER: 3]} \\ \text{[NUM: SING]} \end{array}$$

agr-value

The use of material implication can be seen in the discussion of principles of grammar, 1.2.3; I will make some evaluative comment on this extension in 2.1.4.1 and 3.1.2.5.

1.2.1.5. Subsumption.

A final relevant property of signs is their potential for partial ordering via a subsumption relation. (1.44) below is clearly a less informative sign than those in (1.6)--(1.9) above. At the same time, the information described by (1.44) below is also true of each of the signs in (1.6)--(1.9). That is, (1.44)'s less specific information structure includes within it such signs as (1.6)--(1.9), and can be said to subsume them.

(1.44)

$$\begin{array}{c} \text{[SYN: [HEAD: MAJ: V} \\ \text{[SUBCAT: <VP[INF] ... >]} \\ \text{SEM: i} \end{array}]$$

In general, we can say that a sign A subsumes a sign B if it is a less fully specified partial information structure than B. The sign in (1.45) subsumes all lexical intransitive verbs, which would each separately require further specifying with, among other, their individual phonology attributes.

(1.45)

$$\left[\text{SYNTAX} \mid \text{LOCAL:} \begin{bmatrix} \text{MAJ: V} \\ \text{LEX: +} \\ \text{SUBCAT} \langle \text{NP} \rangle \end{bmatrix} \right]$$

Pollard and Sag generally prefer to state the subsumption relation as follows: that A is subsumed by B if A contains at least as much information as B. See Sag & Pollard(1987:6) and Pollard & Sag(1987:7). Subsumption is therefore the inverse of extension: if A subsumes B, then B is an extension of A.

This relation, subsumption, allows a partial ordering among signs. Its value in relating the lexical signs, rules, and principles which together make up the metagrammar of HPSG depends on the fact that signs related by subsumption can unify with each other. This partial ordering is utilised to great advantage in modularising both syntax and lexicon. Thus, universal principles, language specific principles, rules and signs can each be specified as rather sparse schemata related via the subsumption relation, which interact to generate the surface strings of the language, see 1.2.3. In the lexicon, as I show in 1.2.4, subsumptive ordering permits us to structure in a very effective way, all the parochial detail. It is in this that the potential for recursive and parsimonious information structures lies.

1.2.2. The Rule Application Algorithm.

In Pollard(1984) and (1985), the combination of constituents is explicated via a "Rule Application Algorithm" , or, as it was called originally in Pollard(1984:45,62), a "Rule-to-Tree Principle." This is a procedural rather than a declarative, undirectional statement, and it is not formulated within a unificational framework. It has therefore been (partly) replaced in later work by a formulation more in the spirit of unificational theory, but remains a useful introduction to the mechanism of mother-node formation from constituent daughters.

In this section, I consider this formulation of HPSG by algorithm, and apply it to describe various simple sentential strings. In 1.2.3 I will deal with its reformulation in procedural, unificational terms, following Pollard & Sag (1987) and Sag & Pollard(1987).

I state the algorithm in (1.46), taking it from Pollard (1985:29) with some minor modification in wording for the sake of clarity.

(1.46) Rule Application Algorithm

I. To construct the mother from the daughters, start by matching some sign with H of the rule, and then proceed through the other rule symbols X_i , in the order in which they are indexed, doing the following:

A. If the rule is a head-complement rule do (1), if it is a linking rule, do (2):

(1) From the SUBCAT of the sign matched as H, peel off the top category X. Then do either (a) or (b):

(a) i. (Subcategorisation Principle).

Match some sign with X_i of the rule by merging this peeled off X into that sign's syntax.

ii. (Control Agreement Principle)

If X_i is a controlled constituent, then

- from the SUBCAT of X_i peel off the top category,
- and merge it into the top category on the SUBCAT stack of H

iii. (Semantic Interpretation Principle)

Write the semantics of the mother as the unification of the semantics of H and Xi.⁴ Thus, set C[INDEX] = C[SEMANTICS], and merge into H[SEMANTICS]

(b) (Gap Introduction Principle)

Alternatively, take this X from the top of H[SUBCAT] and push onto the top of the H[SLASH] stack

(2) If the rule is a linking rule, apply the procedure stated on the rule.

B. For each binding feature F, append or merge each category in Xi's F-binding stack onto the top of H's F-binding stack. (Binding Inheritance Principle)

C. The semantics of the mother is the same as that on the head daughter.

II. Head Feature Principle.

The head features on the mother are the unification (least upper bound) of the head features on all the head daughters.

4. This is actually formulated in three disjunctive sub-parts in Pollard & Sag(1987), as follows.

Unify the semantics of two signs in NP thus:

- (1) if C is a determiner, return the quantifier formed by adding the specification DET = C[SEMANTICS] to H[SEMANTICS]
- (2) if C is a quantifier, set C[INDEX] = C[SEM|RESTRICTION], and set C[SEMANTICS|SCOPE] = H[SEMANTICS].
- (3) otherwise, set C[INDEX] = C[SEMANTICS], and merge into H[SEMANTICS].

Since the study of noun phrases, and how their semantic attribute is formalised lies outside the scope of the thesis, I shall have little recourse to this aspect of the sign.

This is rather complex, and requires some illustration. I will look at three illustrative examples in the following three sub-sections, and then briefly consider Control and Agreement. Note also that an over-simple definition of the Head Feature Principle is adopted in the above statement; this will be re-evaluated in later chapters.

1.2.2.1. A simple sentence.

Consider how the algorithm applies to the construction of the sentence in (1.47).

(1.47) Gordon kissed Karin

In the conventional parse of this sentence, an NP (subject) is sister to a VP, which in turn is mother to V and NP (object) sisters. The three lexical signs might be formulated as follows:

(1.48)

[	PHON: kissed]
[	SYN : [HEAD: [MAJ: V PAST]]
[	SUBCAT: <NP _[2] NP _[1] >]
[	SEM: [CONTENT: kiss ROLE ₁ : [1] ROLE ₂ : [2]]

(1.49)

[	PHON: Karin]
[	SYN : HEAD: MAJ N]
[	SEM|CONTENT: Karin]

(1.50)

[	PHON: Gordon]
[	SYN : HEAD: MAJ N]
[	SEM|CONTENT: Gordon]

In following the algorithm, we first select the sign 'kissed' as head, and that of 'Karin' as complement, to construct a new, VP sign, by Rule 2, $\text{SUBCAT}\langle [] \rangle \rightarrow \text{H}[\text{LEX}], \text{C}$. First, following through I.1.a.i, the Subcategorisation Principle, peel off the first subcategorised-for complement from H, the verbal sign, that is, $\text{NP}_{[2]}$, and merge this into the syntax attribute of the sign 'Karin', by writing the index [2] into the latter sign's syntax attribute. The semantic attributes are merged according to I.1.a.iii by writing the index, [2], in C's syntax into C's semantics; this cross-indexes C's semantics with H's semantics, which can then unify. The resultant sign is:

(1.51)

PHON:	kissed Karin
SYN :	[HEAD: [MAJ: V] PAST]]
	SUBCAT: < NP [1] >
SEM:	[CONTENT: kiss ROLE ₁ : [1] ROLE ₂ : Karin]]

'Peeling off' is colloquial metaphor for the cancellation operation familiar from Categorical Grammar. It can be defined as follows: (1) if the syntax of a sign matches that of the first sign in SUBCAT, the two attributes unify, and this is formally marked by deleting the subcategorised-for sign from SUBCAT. (2) The semantic attribute of a sign must be unified into the head-sign's semantic attribute as indicated by indexing tags. (3) The phonology of the complement and head signs concatenate.

This sign, (1.51), is still unsaturated, having a further subcategorised-for NP, the subject. A further run through the

algorithm using Rule 1, $\perp \rightarrow C H$,⁵ achieves this remaining unification. Once again, the first step involves (1.a.i): peel off the subcategorised complement from $H|SUBCAT$, and write its index into the syntax of the sign 'Gordon'. The Semantics is unified according to (1.a.iii) by writing the same index, [1] into the semantics of the sign 'Gordon' and unifying. The resultant sign is:

(1.52)

[	PHON: Gordon kissed Karin]
SYN :	[	HEAD: [MAJ: V]
		[PAST
		]SUBCAT:< >
SEM:	[	CONTENT: kiss
		ROLE ₁ : Gordon
		ROLE ₂ : Karin
]		

Note here how SUBCAT and ROLE interact, and recall the remarks made in 1.1.2.

1.2.2.2. A controlled complement.

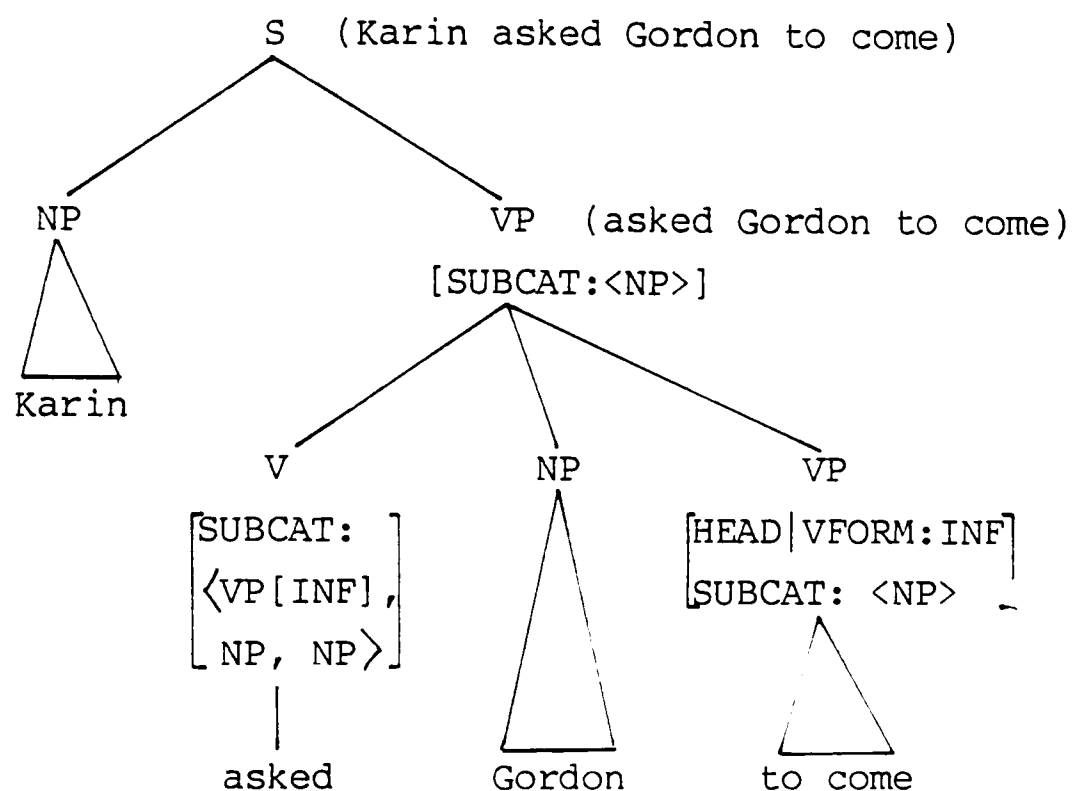
As a second, and slightly more complex example which includes an infinitival complement, consider (1.53).

(1.53) Karin asked Gordon to come

A Phrase Structure Grammar might assign a structure such as (1.54) to this:

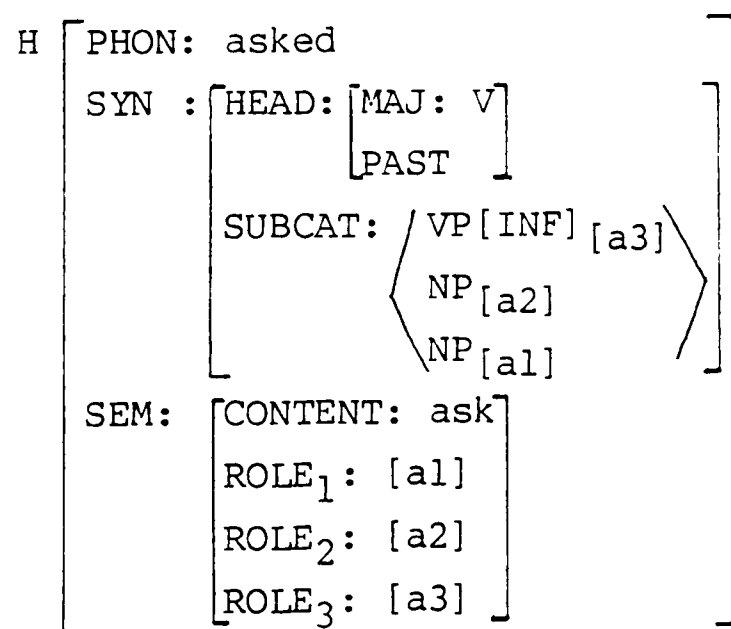
5. \perp denotes the empty category, ie one with no feature specifications, which therefore subsumes all others. Technically, it is the bottom of the information semi-lattice, ie. the empty sign. Note that here the empty category is equivalent to the TG initial symbol: the maximally general category, and not to the empty category of TG. See Pollard(1984) for rules of this format, and Pollard & Sag(1987:42).

(1.54)

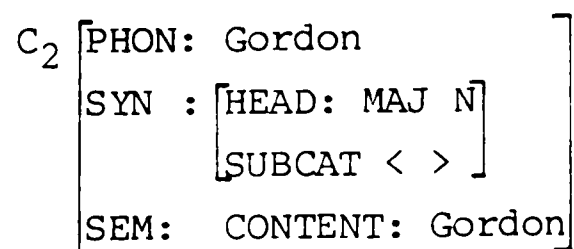


In constructing this sentence from its lexical signs via the algorithm, we proceed first by constructing the VP 'asked Gordon to come' by the Rule $[SUBCAT<[...]>] \dashrightarrow H C_2 C_1$. These three signs H, C_2 and C_1 are:

(1.55)



(1.56)



(1.57)

$$C_1 \left[\begin{array}{l} \text{PHON: to come} \\ \text{SYN: } \left[\begin{array}{l} \text{HEAD: } \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: INF} \end{array} \right] \\ \text{SUBCAT} \langle \text{NP}_{[c1]} \rangle \end{array} \right] \\ \text{SEM: } \left[\begin{array}{l} \text{CONTENT: come} \\ \text{ROLE}_1: [c1] \end{array} \right] \end{array} \right]$$

The tags associated with the sign "ask" are given here as [a1], [a2], [a3], and that associated with the sign "come" as [c1] for mnemonic reasons only. I ignore here the question of the proper categorial analysis of the infinitival "to".

In this example, H is the sign 'asked', and the other two are the complements for which H is subcategorised. According to the algorithm, we select the first indexed complement, C_1 of the rule, and since it is a head-complement rule, we proceed through I.A.(1) thus: The complement C_1 is identified with the top complement on the SUBCAT stack, VP[INF], and for unification to succeed, C_1 must also be a sign with VFORM value VP[INF], such as 'to come'. Assuming this, peel off the top category in the H[SUBCAT], ie VP[INF], and since it is a real constituent rather than a gap, proceed with (a) rather than (b). a.i. unifies the syntax of VP[INF] with the syntax of H (no change in H) and adds the index value which is specified on H[SUBCAT:VP[INF]] in C[SYN|IND], ie. [a3]. At this point, the two partially merged constituents can now be represented as in (1.58) below.

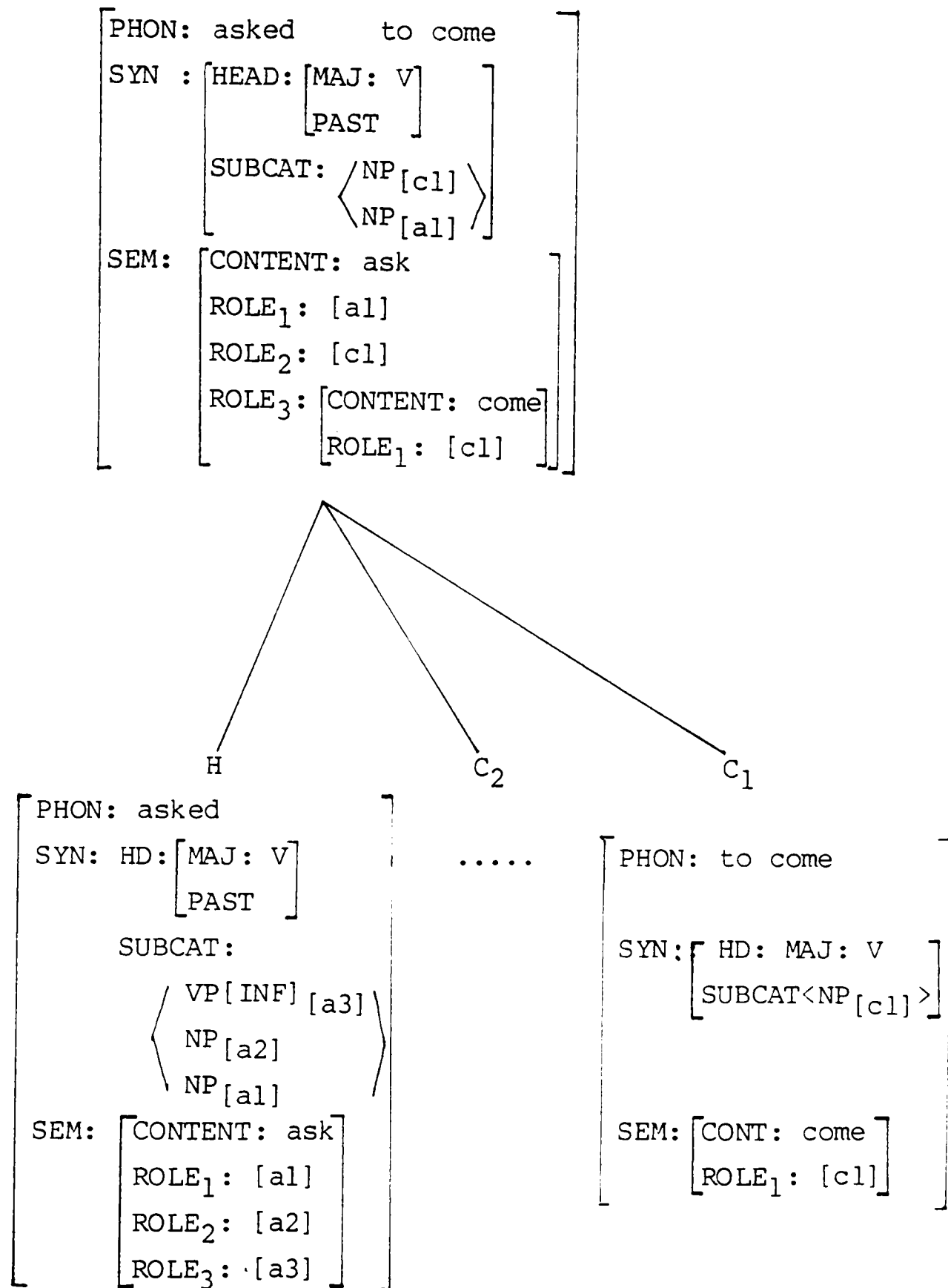
(1.58)

H	C ₁
$\left[\begin{array}{l} \text{PHON: asked} \\ \text{SYN : } \left[\begin{array}{l} \text{HEAD: } \left[\begin{array}{l} \text{MAJ: V} \\ \text{PAST} \end{array} \right] \\ \text{SUBCAT: } \left\langle \begin{array}{l} \text{NP}_{[a2]} \\ \text{NP}_{[a1]} \end{array} \right\rangle \end{array} \right] \\ \text{SEM: } \left[\begin{array}{l} \text{CONTENT: ask} \\ \text{ROLE}_1: [a1] \\ \text{ROLE}_2: [a2] \\ \text{ROLE}_3: [a3] \end{array} \right] \end{array} \right]$	$\left[\begin{array}{l} \text{PHON: to come} \\ \text{SYN : } \left[\begin{array}{l} \text{HEAD: MAJ: V} \\ \text{SUBCAT} \langle \text{NP}_{[c1]} \rangle \\ \text{IND: [a3]} \end{array} \right] \\ \text{SEM: } \left[\begin{array}{l} \text{CONTENT: come} \\ \text{ROLE}_1: [c1] \end{array} \right] \end{array} \right]$

The co-indexing [c1] of its SUBCAT and ROLE₁ values means that C₁ requires a complement which is assigned a role, that is C₁ is a controlled complement. Because of that, proceed with I.A.1.a.ii: Peel off the top of C[SUBCAT], and unify it with the top value of H[SUBCAT]. This involves replacing every [a2] on H by the index [c1] from C₁, both in H[SUBCAT] and in H[SEM|ROLE₂]. Proceed next to a.iii to unify the semantics attributes. First, give C[SEMANTICS] the same INDEX value as C[SYN|IND], that is, [a3]. Next, unify C[SEMANTICS] into H[SEMANTICS] by rewriting H[SEM|ROLE₃] as [CONT: come; ROLE₃: [c1]]. This completes the unification of H and C₁.

At this point we have the partially unified structure represented by the mother node in the following local tree:

(1.59)



We continue now, dealing with the unification of C₂, to complete the application of the rule. Initially the two requisite signs are H[PHON: asked ... to come] from (1.59) above, and C[PHON: Gordon], (1.56), thus

(1.60)

H	C ₂
$\left[\begin{array}{l} \text{PHON: asked to come} \\ \text{SYN : HEAD: [MAJ: V} \\ \quad \quad \quad \text{[PAST} \\ \quad \quad \quad \text{SUBCAT: } \langle \text{NP [cl]} \rangle \\ \text{SEM: [CONTENT: ask} \\ \quad \quad \text{ROLE}_1: [\text{al}] \\ \quad \quad \text{ROLE}_2: [\text{cl}] \\ \quad \quad \text{ROLE}_3: [\text{CONTENT: come}] \\ \quad \quad \quad \text{[ROLE}_1: [\text{cl}]] \end{array} \right]$	$\left[\begin{array}{l} \text{PHON: Gordon} \\ \text{SYN: [HD: MAJ: N} \\ \quad \quad \text{[SUBCAT } \langle \rangle \text{]} \\ \text{SEM|CONT: Gordon} \end{array} \right]$

Running through the Rule Application Algorithm again, deal first with the Subcategorisation Principle, a.i. Peel off the top sign from H[SUBCAT], and place its index [cl] as the value of C[SYN|IND]. Continue to the Semantics Interpretation Principle, a.iii, and first give C[SEMANTICS] the same INDEX value as C[SYN|IND], that is, [cl]. Then unify C[SEMANTICS] into H[SEMANTICS], by writing H[SEM|ROLE₂: [cl]] as 'Gordon' giving the following sign.

(1.61)

$$\left[\begin{array}{l} \text{PHON: asked Gordon to come} \\ \text{SYN : HEAD: [MAJ: V} \\ \quad \quad \quad \text{[PAST} \\ \quad \quad \quad \text{SUBCAT: } \langle \text{NP [al]} \rangle \\ \text{SEM: [CONTENT: ask} \\ \quad \quad \text{ROLE}_1: [\text{al}] \\ \quad \quad \text{ROLE}_2: \text{Gordon} \\ \quad \quad \text{ROLE}_3: [\text{CONTENT: come}] \\ \quad \quad \quad \text{[ROLE}_1: \text{Gordon}] \end{array} \right]$$

At this point, it might be asked how the phonology 'Gordon' is inserted into the phonology of the string 'asked ... to come', and I will now discuss this.

Recall that the general architecture of HPSG arranges complements in SUBCAT in order of decreasing obliqueness, with controlled complements such as the infinitival 'to leave' followed on the stack by their controller, in this case 'Gordon.' It is by this mechanism that control is accomplished simply as a result of the formalism of the theory, and this entails that VP[INF] is unified into the sign which subcategorises for it before its controller, 'Gordon.' Recall also, that the ordering of complements in SUBCAT is not a reflection of their linear order in surface strings, which property is achieved by means of Linear Precedence Constraints. It is LP2, see 1.1.5, which requires that the direct object precedes the more oblique infinitival VP here.

Clearly, the problem of insertion would never appear if the sign 'Gordon' were unified into 'ask' before the sign 'to come.' However, this would require re-designing the whole control mechanism mediated by the obliqueness hierarchy of SUBCAT. Alternatively, it might be attempted by subcategorising 'ask' for a sentential(S) sign, rather than a bare VP. Then the string 'Gordon to come' is a category S[INF]. A further alternative might be to introduce a Wrapping operation for inserting the phonology of the grammatical object/controller, as in such work as Bach(1981), Pollard (1984) inter alia. Since in this chapter I am concerned with expounding HPSG in its current formulation, and not revising it, or providing competing analyses for English, I will not pursue any of these options here.

The essential solution is in any case much simpler, and merely requires spelling out a little more the implications of properties already in place. The sign 'ask' subcategorises for the ordered list $\langle \text{VP[INF]}, \text{NP}, \text{NP} \rangle$. In a configurational language, in which the final complement NP is the subject and is unified-in via Rule 1, the sign 'ask' has two complement sisters which are unified in by Rule 2. That is, the two signs VP[INF] and NP are to be unified-in together; the apparent binarity is an artefact imposed by the form of the algorithm. In declarative terms, then, the three signs 'ask', 'Gordon' and 'to come'

unify simultaneously; 'Gordon' follows VP[INF] on the SUBCAT stack and so is its controller; and LP2 requires that the three signs concatenate their phonologies in the order 'ask' < 'Gordon' < 'to come' under unification. 'ask' precedes 'Gordon' in virtue of LP1 which requires lexical signs to precede phrasal (NP) sisters, and 'Gordon' precedes 'to come' in virtue of LP2 which requires that less oblique sisters precede more oblique sisters.

With this short, but necessary, explanation behind us, we continue with the example in hand.

(1.62)

[PHON: asked Gordon to come	
SYN :	[HEAD: [MAJ: V
	[PAST
SEM:	[SUBCAT: <NP [a]] >
	[CONTENT: ask
	ROLE ₁ : [a]
	ROLE ₂ : Gordon
	ROLE ₃ : [CONTENT: come
	[ROLE ₁ : Gordon

It should be simple to anticipate the final unification, via the rule $\perp \rightarrow C H$, to give the complete sentence (1.53), and I will not go through the algorithm another time. The final output is given in (1.63).

(1.63)

[PHON: Karin asked Gordon to come	
SYN :	[HEAD: [MAJ: V
	[PAST
SEM:	[CONTENT: ask
	ROLE ₁ : Karin
	ROLE ₂ : Gordon
	ROLE ₃ : [CONTENT: come
	[ROLE ₁ : Gordon

In an inverted sentence such as 'Did Karin ask Gordon to come?', the final stage involves unification of three constituents, Aux-NP(subj)-VP, recall Rule 3 in 1.1.4, and the algorithm applies in a parallel fashion (Pollard & Sag 1987:156ff).

If we follow Borsley(1987), and accord the grammatical subject NP a separate feature SUBJ, the algorithm still applies, with similar results, to the above exemplars, given obvious modifications of its details to account for the new attribute. Assuming that an "inverted" structure, such as 'Did Karin ask Gordon to come?' is still treated as a ternary tree under Borsley's modification, the algorithm will continue to apply.

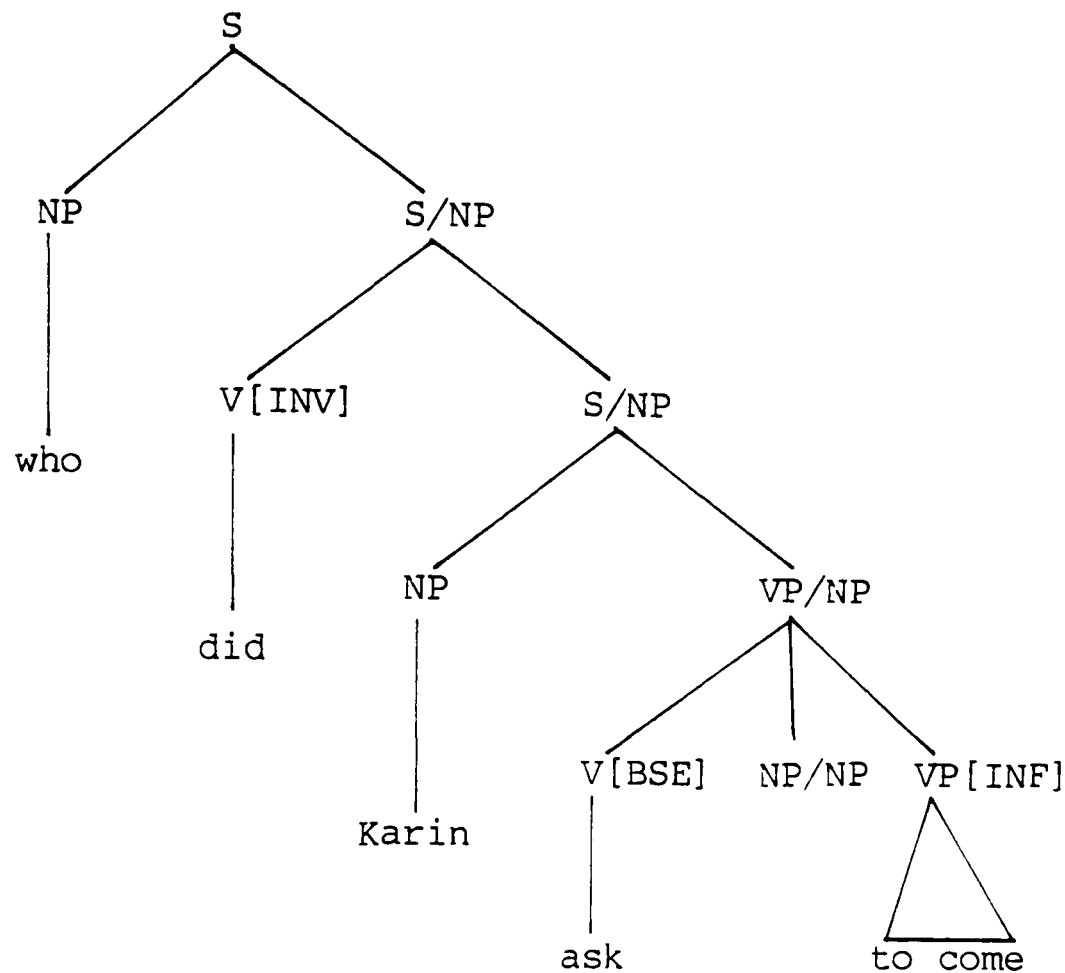
1.2.2.3. A WH unbounded dependency.

Consider one further example, with a dislocated WH filler-gap dependency.

(1.64) Who did Karin ask to come?

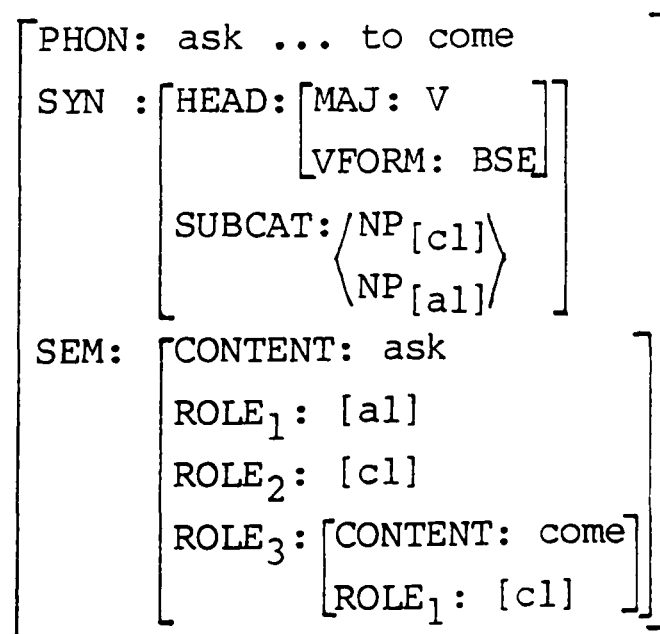
In a GPSG framework, this would be accorded a structure roughly that in (1.65).

(1.65)



To generate the string in HPSG will require application of the Gap Introduction Principle and the Binding Inheritance Principle instead of the unification shown in (1.60). We start with a slightly different lexical sign for 'ask', with VFORM: BSE, and take up the tale after the first unification involving the lexical signs 'ask' and 'to come'.

(1.66)



On a next run through the algorithm, proceed to I.A.1.b, the Gap

Introduction Principle. Peel off the top category from H[SUBCAT] and create a binding stack, BIND'G|QUE, with this category as its top (here, its only) value. The resultant sign is now:

(1.67)

$$\left[\begin{array}{l} \text{PHON: ask ... to come} \\ \text{SYN : } \left[\begin{array}{l} \text{HEAD: } \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: BSE} \end{array} \right] \\ \text{SUBCAT: } \langle \text{NP}_{[a1]} \rangle \\ \text{BINDG:QUE: } \langle \text{NP}_{[c1]} \rangle \end{array} \right] \\ \text{SEM: } \left[\begin{array}{l} \text{CONTENT: ask} \\ \text{ROLE}_1: [a1] \\ \text{ROLE}_2: [c1] \\ \text{ROLE}_3: \left[\begin{array}{l} \text{CONTENT: come} \\ \text{ROLE}_1: [c1] \end{array} \right] \end{array} \right] \end{array} \right]$$

This unification is complete, and we proceed to a further application of the algorithm to unify-in the subcategorised-for (subject) complement required by H[SUBCAT]. This time, the unification will require Rule 3, $\perp \dashrightarrow H \ C_2 \ C_1$ to introduce an auxiliary whose subject follows, in which the auxiliary will be the head; see 1.1.4 and the treatment of all auxiliaries via the features INV and AUX in Pollard & Sag(1987:124,204).

(1.68)

$$\begin{array}{cc} \text{H} & \text{C}_1 \\ \left[\begin{array}{l} \text{PHON: did} \\ \text{SYN : } \left[\begin{array}{l} \text{HEAD: } \left[\begin{array}{l} \text{MAJ: V} \\ \text{PAST} \\ \text{AUX: +} \\ \text{INV: +} \end{array} \right] \\ \text{SUBCAT: } \left\{ \begin{array}{l} \text{VP[BSE]}_{[d1]} \\ \text{NP}_{[d2]} \end{array} \right\} \\ \text{SEM: } \left[\begin{array}{l} \text{CONTENT: did} \\ \text{ROLE}_1: [d2] \\ \text{ROLE}_2: [d1] \end{array} \right] \end{array} \right] \end{array} \right] & \left[\begin{array}{l} \text{PHON: ask ... to come} \\ \text{SYN : } \left[\begin{array}{l} \text{HEAD: } \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: BSE} \end{array} \right] \\ \text{SUBCAT: } \langle \text{NP}_{[a1]} \rangle \\ \text{BINDG:QUE: } \langle \text{NP}_{[c1]} \rangle \end{array} \right] \\ \text{SEM: } \left[\begin{array}{l} \text{CONTENT: ask} \\ \text{ROLE}_1: [a1] \\ \text{ROLE}_2: [c1] \\ \text{ROLE}_3: \left[\begin{array}{l} \text{CONT: come} \\ \text{ROLE}_1: [c1] \end{array} \right] \end{array} \right] \end{array} \right] \end{array}$$

Proceed through the Subcategorisation Principle a.(i), peeling off the top value from H[SUBCAT], indexing C[SYNTAX] to the same value [d1], so unifying the syntax. Since C[SUBCAT] is not empty, proceed to a.(ii), the Control Agreement Principle. Peel off C[SUBCAT], and write its index value [a1] into the top value in H[SUBCAT], and make the same replacement throughout, so that all [d2] become [a1]. Proceed to the Semantic Interpretation Principle, and set C[SYNTAX|IND] = C[SEMANTICS] = [d1]. Then unify C[SEMANTICS] into H[SEMANTICS] = [d1]. Proceed to the Binding Inheritance Principle, I.B, and merge C[SYNTAX|BINDING|QUE:<NP_[c1]>] into H[SYNTAX]. This results in the sign below at this point.

(1.69)

H	
[	PHON: did ... ask ... to come
SYN :	[
	HEAD: [
	MAJ: V
	PAST
	AUX: +
	INV: +]
	SUBCAT:<NP _[a1] >
	BINDG:QUE:<NP _[c1] >]
SEM:	[
	CONTENT: did
	ROLE ₁ : [a1]
	ROLE ₂ : [
	CONTENT: ask
	ROLE ₁ : [a1]
	ROLE ₂ : [c1]
	ROLE ₃ : [
	CONTENT: come
	ROLE ₁ : [c1]
]
]	

The algorithm is applied yet again to unify-in the subject complement, 'Karin', whose sign can be represented as

(1.70)

[	PHON: Karin
SYN :	[
	HEAD: MAJ: N
	SUBCAT:< >]
SEM|	CONT: Karin
]	

This process is quite simple, continuing with Rule 3 to yield the following sign. As with the previous example in 1.2.2.2, the apparent binarity is an artefact of the algorithm; 'did', 'Karin' and 'ask ... to come' are sisters, and as such are unified simultaneously.

(1.71)

		H	
		PHON: did Karin ask ... to come	
	SYN :	HEAD: [MAJ: V	
		PAST	
		AUX: +	
		INV: +	
		BINDG:QUE:<NP _[c1] >	
	SEM:	CONTENT: did	
		ROLE ₁ : Karin	
		ROLE ₂ : [CONTENT: ask	
		ROLE ₁ : Karin	
		ROLE ₂ : [c1]	
		ROLE ₃ : [CONTENT: come	
		ROLE ₁ : [c1]	

This sign now requires a final unification to fill the binding stack dependency. This is achieved by means of a linking rule, which Pollard(1985:25) formulates as follows.

(1.72)

$$\perp \text{ ---> } X \text{ H } \begin{bmatrix} \text{MAJ: V} \\ \text{VFORM:FIN} \\ \text{SUBCAT< >} \end{bmatrix} \quad \text{SLASH-bind X to H}$$

There is an appropriate process stipulated with the rule, and it is this that is referred to in A.2. of the algorithm, and with which we proceed now. Complement X, in this example will be associated with the sign below, whose semantic CONT attribute is described as an individual variable, x.

(1.73)

PHON: who	
SYN: [HEAD: MAJ: N	SUBCAT: < >]
SEM: CONTENT: x	

SLASH-binding X to H requires a unification of X and H in which X fills the BINDING-QUE:<NP> dependency within H[SYNTAX]. This is then, a parallel process to that carried out in merging any complement with a head which subcategorises for that category of complement. In (1.71) above, the sign 'who' will then unify with the index [c1] throughout the head sign. This yields

(1.74)

H	
PHON: who did Karin ask ... to come	
SYN : HEAD: MAJ: V	
SEM: [CONTENT: did	[
ROLE ₁ : Karin]
ROLE ₂ : [CONTENT: ask	[
ROLE ₁ : Karin]
ROLE ₂ : x]
ROLE ₃ : [CONTENT: come	[
ROLE ₁ : x]
]]

Note the way in which the information structure of embedded semantic roles carries the dependency.

Pollard(1985) doesn't refer to an attribute-value BIND'G|QUE:<X> in his linking rule above (although note that Pollard (1988) uses TO-BIND as an attribute). If we do make explicit reference to this attribute, it really covers the need to slash-bind X to H, without articulating the condition separately. Thus:

(1.75)

$$\perp \dashrightarrow X \quad H \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM:FIN} \\ \text{SUBCAT} \langle \rangle \\ \text{BINDG|QUE:} \langle X \rangle \end{array} \right]$$

X in (1.75) is informal shorthand for a variety of categorial specifications; obviously in any particular case of unbounded dependency (content question, relativisation, topicalisation, or reflexivisation), the linking rule must constrain the filler category. It remains to point out how we control the stage at which binding features are bound. Note that the linking rule does this by specifying that it operates on a saturated sign, SUBCAT $\langle \rangle$, with a BIND'G| QUE: $\langle [X] \rangle$ dependency.

1.2.2.4. Control and Agreement.

I will now quickly summarise the way in which HPSG handles the issues of control and agreement. The signs recorded in (1.6) --(1.9), and repeated here as (1.76) --(1.79) show partial structures for the so-called Equi verbs 'try' (subject-control) and 'persuade' (object-control), and the so-called Raising verbs 'seem' (subject-control) and 'believe' (object-control).

(1.76)

Karin tries to be optimistic (subject-Equi)

$$\left[\begin{array}{l} \text{PHON: tries} \\ \text{SYN: } \left[\begin{array}{l} \text{HEAD: MAJ: V} \\ \text{SUBCAT:} \langle \text{VP[INF]}_{[2]}, \text{NP}_{[1]} \rangle \end{array} \right] \\ \text{SEM: } \left[\begin{array}{l} \text{RELATION: try} \\ \text{ROLE}_1: [1] \\ \text{ROLE}_2: [2] \end{array} \right] \end{array} \right]$$

(1.77)

Gordon persuades Karin to be optimistic
(object-Equi)

[	PHON: persuade]
[	SYN: [HEAD: MAJ: V SUBCAT: <VP[INF] _[3] , NP _[2] , NP _[1] >]
[	SEM: [RELATION: persuade ROLE ₁ : [1] ROLE ₂ : [2] ROLE ₃ : [3]]

(1.78)

Karin seems to be optimistic (subject-Raising)

[	PHON: seems]
[	SYN: [HEAD: MAJ: V SUBCAT: <VP[INF] _[1] , NP>]
[	SEM: [RELATION: seem ROLE ₁ : [1]]

(1.79)

Gordon believes Karin to be optimistic
(object-Raising)

[	PHON: believe]
[	SYN: [HEAD: MAJ: V SUBCAT: <VP[INF] _[2] , NP, NP _[1] >]
[	SEM: [RELATION: believe ROLE ₁ : [1] ROLE ₂ : [2]]

The essence of the analysis here is that the raising verbs do not assign any role to the controller; ie. the complement that follows the VP on the SUBCAT stack is not indexed. A careful look at the above partial signs will show that this is so. Similarly, for the equi verbs, control is mediated through the indexing of a ROLE value to the NP following the VP complement.

Turning now to the question of agreement, I have in 1.1.2 and 1.1.3 glossed over subject-verb agreement very informally, but assuming there the traditional syntactic approach. AGR, then, was always set out as a value of syntax, SYN|AGR. Here I want to discuss the operation of this attribute more cogently.

A more deliberate location of AGR information might be within the subcategorised subject complement, thus:

(1.80)

$$\left[\begin{array}{l} \text{SYN|LOC:} \left[\begin{array}{l} \text{HEAD:MAJ: V} \\ \text{AGR: [1]} \\ \text{SUBCAT: } \langle \dots \text{NP[SYN|LOC|AGR: [1]} \rangle \end{array} \right] \end{array} \right]$$

That is, AGR is an information sub-structure which forms a part of both verb and noun signs. GPSG treats it as head - feature information, but Shilliday(1988), as also Pollard & Sag(1987) [see below] do not. This formulation follows the traditional view of agreement, and might seem to imply that subjects agree with their verbs; however, information-based theories of grammar like HPSG, are non-directional. That is, in (1.80) above, AGR provides a restriction of partial information which stipulates that the same partial structure (ie. the attribute-value bundles described in AGR) is shared in two locations in the sign. Thus, AGR values ensure that a verb and its subject must share certain specified information, generally that of person, number and gender, but do not impose directionality either way.

One obvious outcome of this is that, in contrast to many traditional explanations, a verb contains all the necessary information about agreement categories for a full representation even in the absence of an explicit subject. The implication of this for "pro-drop" phenomena is clear: no subject category is required to produce grammatical derivations.

In a recent paper, Pollard & Sag(1988), it is argued that a variety of agreement-like properties in many languages cannot be naturally handled if AGR is a purely syntactic feature

structure. These, it is claimed, are amenable to analysis if AGR is located within the semantic attribute of HPSG signs. Hoeksema(1983) and Chierchia(1988) are others who have made the same suggestion. It is to a consideration of this that I now turn.

Pollard & Sag(op.cit) spell out explicitly that they are not advocating

"a purely semantic theory of agreement. That is, we are not saying that the world is simply divided into singular, plural, masculine, feminine and neuter objects... our approach to agreement, which localises agreement features within referential parameters, provides a natural account ..." (underlining mine, RJS).

With this in mind, consider how they locate AGR. This is formalised as follows for a nominal, (1.81), and a verbal, (1.82), sign respectively, in which person, number and gender are made values of the referential parameter VAR of a nominal sign.

(1.81)

$$\left[\begin{array}{l} \text{SYN} | \text{HEAD} | \text{MAJ: N} \\ \text{SEM} | \text{CONT} | \text{IND} | \text{VAR: AGR: } \left[\begin{array}{l} \text{PER:} \\ \text{NUM:} \\ \text{GDR:} \end{array} \right] \end{array} \right]$$

(1.82)

$$\left[\begin{array}{l} \text{SYN} | \text{HEAD: } \left[\begin{array}{l} \text{MAJ: V} \\ \text{SUBCAT: } \left\langle \begin{array}{l} \text{SYN} | \text{LOC} | \text{HEAD} | \text{MAJ: N} \\ \text{SEM} | \text{CONT: [1] IND} | \text{VAR} | \text{AGR: [2]} \end{array} \right\rangle \end{array} \right] \\ \text{SEM} | \text{CONT: } \left[\begin{array}{l} \text{IND} | \text{VAR} | \text{AGR: [2]} \\ \text{RESTR: } \left[\begin{array}{l} \text{REL:} \\ \text{ROLE}_1: [1] \end{array} \right] \end{array} \right] \end{array} \right]$$

Note particularly how the indexical nominal sign specifies AGR

information within the referential parameter. This permits referential information to be included, for example speaker's gender in languages like French, to account for utterances such as je suis heureux/heureuse 'I am happy'. Referentially derived information concerning the speaker's sex is located in the AGR|GDR attribute of the pronominal sign. It can therefore be specified as either MASC or FEM in sentences, without resorting to separate entries for the pronoun je in the lexicon. Secondly, note that is the referential VAR value of the subcategorised complement in the verbal sign that must be shared with information specified on the ROLE attribute. The intention here is to ensure that the verb sign and its subject must share certain information.

Before going on, note one further point. The above characterisation makes a hypothesis about the grammatical phenomena in which agreement is found cross-linguistically. According to this schema, it exists between a head and its subcategorised-for complement(s). This will certainly account for subject and object agreement with their verb, and for oblique argument agreement, plus determiner-head agreement. I cannot see however, that it applies as stated to the familiar concord of African noun class systems which shows itself on adjectivals and numerals as well as determiners, of which only the last is conceivably subcategorised-for by the head noun.

The above proposal clearly represents a controversial opinion, and one on which I will comment further in 3.1.2.5 and 3.2.1. While recognising its advantages, and, as will be seen in these later sections, in spite of finding some advantage in the analysis of Hadiyya, it is a proposal about which I remain somewhat ambivalent.

1.2.3. Principles and Rules in Declarative Terms.

The above algorithm should have sufficiently introduced the operation of unification of signs, and I now turn here to the revised formulation, in unificational terms, introduced in

Sag(1986), and further developed in Pollard & Sag(1987), to look further at the rule format introduced in 1.1.4, and describe several grammar principles as partial information structures.

As defined in Pollard(1984:47), a unification operation operates on pairs, or subsets, of objects, to produce the least informative object in the domain which contains all the information in each of the members of the pair-set. The unification of some set of objects from a domain is by this definition, just their least upper bound with respect to the partial ordering (= degree of information). It is an operation of set union which applies to, and preserves, all memberships of all sub-sets. See Pollard (ibid), GKPS(1985), Gunji(1987) for full formal definition of the Unification Principle as it applies to Head Grammars. Compare the relation of subsumption explicated in 1.2.1.5, which is the greatest lower bound of the various member information objects.

Before considering rule application, I will look briefly at the above-mentioned principles and their formulation in declarative terms.

HPSG posits various principles of universal grammar, including the Head Feature Principle (HFP), the Subcategorisation Principle, the Semantics Principle, the Control Principle, the Gap Introduction Principle, and the Binding Inheritance Principle, as well as the Control Agreement Principle and the Constituent Ordering Principle (COP), the last of which subsume language specific COPs. Pollard & Sag(1987) have suggested formulations of the Head Feature, Subcategorisation, Semantics and Constituent Order Principles, as well as a preliminary Adjuncts Principle, and I will cover these briefly here. Revision of the Head Feature Principle, I will discuss in Chapter 3, and formulations of Linking Rules, GIP, BIP, are to be found in the Addendum to this chapter.

These all take the general form (1.83).

(1.83)

$$[\text{DTRS } \underline{\text{headed-structure}}[]] \implies X$$

The arrow \implies should be read "subsumes", and is technically the material implication. $\underline{\text{Headed-structure}}[]$ subsumes all signs which are subtypes of the structure $\underline{\text{constituent-structure}}[]$, itself subtype of $\underline{\text{phrasal-sign}}[]$. Consider first those which have been formulated in Pollard & Sag(1987). That these principles all state that $\underline{\text{headed-structures}}$ subsume another, more specific feature structure by principle is another way in which the name Head-Driven is appropriate for the model.

The Head Feature Principle is HPSG's way of ensuring that the head features on a mother are the same as those on its constituent head-daughter. In Pollard & Sag(1987:148) it is formulated as (1.84) below, but certainly identity of features is far too strong a constraint. See further, Chapters 4 and 6.

(1.84) Head Feature Principle

$$[\text{DTRS } \underline{\text{headed-str}}[]] \implies \left[\begin{array}{l} \text{SYN} | \text{LOC} | \text{HEAD } [1] \\ \text{DTRS} | \text{HD-DTR} | \text{SYN} | \text{LOC} | \text{HEAD } [1] \end{array} \right]$$

ie. in every headed structure, the head features take the same attribute-value matrix as does the head daughter.

By the Subcategorisation Principle, the link between the subcategorised-for complements of mother and head-daughter is achieved.

(1.85) Subcategorisation Principle

$$[\text{DTRS } \underline{\text{headed-str}}[]] \implies \left[\begin{array}{l} \text{SYN} | \text{LOC} | \text{SUBCAT } [2] \\ \text{DTRS} : \left[\begin{array}{l} \text{HD-DTR} | \text{SYN} | \text{LOC} | \text{SUBCAT append } ([1], [2]) \\ \text{COMP-DTRS } [1] \end{array} \right] \end{array} \right]$$

ie. the value of SUBCAT on a sign equals the value on the head daughter less the number of complement daughters.

The Semantics Principle is formalised (Pollard & Sag 1987:148) thus, to describe how the semantic attributes of each constituent sign is unified into the head-sign:

(1.86) Semantics Principle

[DTRS headed-str[]] ==>

$$\left[\begin{array}{l} \text{SEM} \left[\begin{array}{l} \text{CONT: successively combine-semantics } ([1], [2]) \\ \text{INDICES: collect indices } ([3]) \end{array} \right] \\ \text{DTRS } [3] \left[\begin{array}{l} \text{HD-DTR|SEM|CONT } [1] \\ \text{COMP-DTRS } [2] \end{array} \right] \end{array} \right]$$

ie. (roughly) the semantics of a headed structure is a function combining the semantics of all the daughters.

Perhaps one further issue of sign subsumption should be mentioned here. Recall that HPSG deliberately incorporates a lexicality attribute LEX, whose values are the Boolean members + or -. It is obvious that no mother node can be LEX: +, since it has constituent daughters, and I offer here a simple formulation of this. Statements like this, are at heart, Feature Co-occurrence Restrictions, or FCRs, and encode a number of universal or language specific material implications. Thus:

(1.87)

$$\text{FCR} \quad \left[\begin{array}{l} \text{SYN|LOC|LEX: -} \\ \text{DTRS: [...]} \end{array} \right]$$

This clearly interacts with the rules of the grammar.

The various principles themselves can be unified, yielding partial information structures which contain all the information of the individual principles. That is, each of the principles

subsumes a sign of fuller information; each principle factors out partial information from the more specific lexical and phrasal signs of the language. Thus, (1.88) combines the Principles (1.84) through (1.86).

(1.88)

$$[DTRS \text{ headed-str []}] \implies$$

$$\left[\begin{array}{l} \text{SYN: LOC:} \left[\begin{array}{l} \text{HEAD: [1]} \\ \text{SUBCAT: } < [2] > \end{array} \right] \\ \text{SEM:} \left[\begin{array}{l} \text{CONT: successively combine semantics [3],[4]} \\ \text{IND: collect indices [5]} \end{array} \right] \\ \text{DTRS: [5]} \left[\begin{array}{l} \text{HD-DTR:} \left[\begin{array}{l} \text{SYN:LOC:HEAD: [1]} \\ \text{SUBCAT:} < [2], [3] > \\ \text{SEM|CONT: [4]} \end{array} \right] \\ \text{COMP-DTRS: [3]} \end{array} \right] \end{array} \right]$$

These principles allow us to characterise human language in the following way. Universal grammar might be considered to be the unification of all universal principles, P_1, \dots, P_n , in (1.89). Whether this can be a coherent statement depends on how UG parameters can be stated in information structures.

(1.89)

$$UG = P_1 \ \& \ \dots \ \& \ P_n.$$

In addition, each language imposes its own specific constraints, say P_{n+1}, \dots, P_{n+m} , a small set of grammar rules R_1, \dots, R_n , and a finite set of lexical signs L_1, \dots, L_n . Then English, say, is definable as the unification of all the principles with one of the lexical signs or one of the rules.

(1.90)

English =

$$P_1 \ \& \ \dots \ \& \ P_{n+m} \ \& \ (L_1 \vee \dots \vee L_n \vee R_1 \vee \dots \vee R_n)$$

Now, look at the way in which the principles defined above, and

the rules interact in detail. Consider Rule 1 again, introduced in (1.23) and repeated here.

(1.91) Rule 1.

$$\left[\begin{array}{l} \text{SYNTAX|LOCAL|SUBCAT: } \langle \rangle \\ \text{DTRS: } \left[\begin{array}{l} \text{HEAD-DTR|SYNTAX|LOCAL: } \left[\begin{array}{l} \text{HEAD|INV: -} \\ \text{LEX: -} \end{array} \right] \\ \text{COMP-DTRS: } \langle [] \rangle \end{array} \right] \end{array} \right]$$

In HPSG, as was stated in 1.1.4, rules are written in the same format as signs, ie, in partial information structures of feature-value pairs. Recall that the rule is a statement of the constituent-daughter strings which combine to form the mother-constituent, and that daughter-constituents are incorporated via the features HEAD-DTR(head-daughter), and COMP-DTRS (complement-daughters).

Recall also that the attribute SYNTAX|LOCAL|SUBCAT:< > in essence specifies that this rule has a saturated sign as its output. Its constituent DTRS consist of a head and a single complement COMP-DTR<[]>. The HEAD-DTR is required to be a phrasal sign, in which no "subject-auxiliary inversion" is operative. As a consequence of the COMP-DTR:<[]> attribute being a single complement category, HEAD-DTR must be an unsaturated sign whose combinatorial capacity requires only a single complement for saturation.

The string 'likes Shona' is such a sign, thus:

(1.92)

$$\left[\begin{array}{l} \text{PHON: likes Shona} \\ \text{SYNT: } \left[\begin{array}{l} \text{HD: } \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: BASE} \end{array} \right] \\ \text{SUBCAT: } \langle \text{NP}_{[a1]} \rangle \end{array} \right] \\ \text{SEM: } \left[\begin{array}{l} \text{CONTENT: like} \\ \text{ROLE}_1: [a1] \\ \text{ROLE}_2: \text{Shona} \end{array} \right] \end{array} \right]$$

And the sign 'Gordon' meets the requirements for a COMP-DTR.

(1.93)

PHON: Gordon		
SYNT: <table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">HD: MAJ: N</td> </tr> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">SUBCAT: < ></td> </tr> </table>	HD: MAJ: N	SUBCAT: < >
HD: MAJ: N		
SUBCAT: < >		
SEM : CONTENT: Gordon		

Rule 1 states that HEAD-DTR and COMP-DTR unify to produce a saturated sign. This incorporates the Subcategorisation Principle, (1.85) which relates the list of subcategorised-for categories on mother and daughter with the number of complement categories. The Head Feature Principle, (1.84) unifies with the rule to specify the transfer of head features between mother and daughter, and the Semantic Principle, (1.86) unifies with the rule to specify the unification of the semantic attributes of the constituent signs. Together this constrains the unification of particular lexical signs, and in the present instance, permits the signs for 'Gordon' and 'likes Shona' to unify. ie. specifying that the sign for 'Gordon' must satisfy the single SUBCAT requirement of 'likes Shona', the HEAD-DTR. That is, the information structures of the two signs must be compatible with the cumulative constraints placed on their unification by all relevant rules and principles.

1.2.4. Organisation of the lexicon.

TG was slow to realise the part the lexicon could and should play in the grammar of a natural language. Even after Chomsky (1970:185) recognised that "certain descriptive problems can be handled by enriching the lexicon and simplifying the categorial component of the base", Thomason (1974:719) is still able to criticise proponents of TG for minimalising lexical complexity, at the cost of increasing the complexity of the syntactic component, and asserts

"prima facie, the lexicon is just the place where one

would expect the mess and clutter of a natural language to make itself most evident." (ibid).

The trend more recently has been towards giving the lexicon more functional weight, as in Lieber(1981), Farmer(1985) and Beard (1986), inter alia, and, if anything, this trend has accelerated in post-GKPS work. Thus Pollard(1984:98) refers to it as "... the natural repository of the idiosyncratic", and Cann(1987: 21) can refer to "the lexicon and the feature system, two components whose parochiality seems almost self-evident", and Sag & Pollard (1987:5) claim that "the combinatorial properties of words and phrases are inherent in the words and phrases themselves" -- apparently, then, in the lexical entries.

The redundancy in EST of specifying subcategorisation information both in the lexicon and in the PS component (Chomsky,1965: 90ff), was later reduced by removing it completely from PS rules. In GPSG, in contrast, this redundancy was reduced by specifying subcategorisation in PS rules, by a coding which accessed the requisite (set of) lexical items. Head Grammar moves in the opposite direction, in accord with the majority trend, in eliminating subcategorisation information from rules, and dealing with it totally within the lexicon; more specifically, within the lexical sign.

In a derivational or top-down syntax, lexical insertion has been typically conceived of as a process of inserting words from a total word-listing into the terminal symbols of trees; the lexicon is a dictionary of all word-forms in the language, although a morphological component may underlie this (Stanley 1967).

In bottom-up or non-directional models, terminal category features, such as VFORM and AGR features in verbal head signs, specify for the lexicon what word-building is required, and the morphological component picks up syntactic features for assembly into words. The lexicon outputs words as they are needed, but is far from a simple, total listing of all morphological forms.

Pollard & Sag(1987:193), drawing inspiration from Flickinger et al(1985), claim to provide an organisational scheme for the lexicon such as will allow

"an elegant and completely lexicon-internal account of a wide range of phenomena that apply to whole classes of lexical signs, including inflectional and derivational processes, polyvalency patterns, and numerous other phenomena (such as tough- "movement" and it- "extraposition") standardly treated within other theories by syntactic mechanisms."

They achieve this by two mechanisms: (i) organising the lexicon as an inheritance hierarchy, and (ii) setting up lexical rules to handle all morphological regularity.

Within HPSG then, Pollard and Sag's proposal claims to control the idiosyncraticity of individual lexical signs, the regularity of much information specified on large numbers of individual lexical signs, as well as the regularities of morphological process and potential for syntactic interaction. I turn now to a brief resume of their proposal; for more detail see Pollard & Sag(1987). In Chapter 2 I will apply it to two major word classes of Hadiyya. Consider a sign such as that for the common noun 'dog', from Pollard & Sag(1987:192).

(1.94)

[PHON: dog]	
SYN|LOC:	[HEAD: [MAJ: N]	
	[NFORM: NORM]	
	SUBCAT <DET V POSP>		
	LEX: +		
SEM:	[CONT|IND [2]	[VAR [1]: [PER: 3RD]
		[NUM: SNG]
		RESTR: [RELN: dog]
		[INST [1]]
	[INDS {[2]}]		

A word or two first, in explanation of some features of this. Notice first, from the SUBCAT value, that common nouns are subcategorised for DETerminer following Pollard and Sag; the above sign puts this information in disjunction with subcategorisation for the possessive element too. Secondly, POSP is here simply a cover term for whatever formal analysis might be adopted for possessive phrases. The occurrence of the attribute IND(ices) in the semantics attribute is part of their analysis of noun phrase semantics, and is not germane to the present issue.

What is germane to this discussion, is that very little of the information in (1.94) is in fact specific to the sign 'dog.' That the sign is lexical rather than phrasal is shared with every word; that it is a noun is information shared with all other nouns; and that it is 3rd person singular is shared with a large sub-set of nouns. All common nouns, but not proper nouns, share the information that the sign can combine with a DET or a POSP sign. These elements of shared information can be set out as follows.

(1.95)

(a) shared by all words

[SYN|LOC|LEX: +]

(b) shared by all nouns (in addition to a)

[SYN|LOC|HEAD|MAJ: N]
[SEM|CONT|IND []]

(c) shared by all 3rd sing. nouns (with a, b)

[SEM|CONT|IND|VAR: [PER: 3RD]
[NUM: SNG]]

(d) shared by all common nouns (with a, b)

$$\left[\begin{array}{l} \text{SYN|LOC:} \left[\begin{array}{l} \text{HEAD|NFORM: NORM} \\ \text{SUBCAT} \langle \text{DET} \vee \text{POSP} \rangle \end{array} \right] \\ \text{SEM:} \left[\begin{array}{l} \text{CONT|IND [2]} \left[\begin{array}{l} \text{VAR [1]} \\ \text{RESTR|INST [1]} \end{array} \right] \\ \text{INDS} \{[2]\} \end{array} \right] \end{array} \right]$$

These partial information structures can of course be unified in a single sign, which has the following structure:

(1.96)

$$\left[\begin{array}{l} \text{SYN|LOC:} \left[\begin{array}{l} \text{HEAD:} \left[\begin{array}{l} \text{MAJ: N} \\ \text{NFORM: NORM} \end{array} \right] \\ \text{SUBCAT:} \langle \text{DET V POSP} \rangle \\ \text{LEX: +} \end{array} \right] \\ \text{SEM:} \left[\begin{array}{l} \text{CONT|IND [2]} \left[\begin{array}{l} \text{VAR [1]:} \left[\begin{array}{l} \text{PER: 3RD} \\ \text{NUM: SING} \end{array} \right] \\ \text{RESTR: INST [1]} \end{array} \right] \\ \text{INDS} \{[2]\} \end{array} \right] \end{array} \right]$$

And the remaining information, which is actually specific to the sign 'dog', is given in (1.97).

(1.97)

$$\left[\begin{array}{l} \text{PHON: dog} \\ \text{SEM|CONT|IND|RESTR|RELN: dog} \end{array} \right]$$

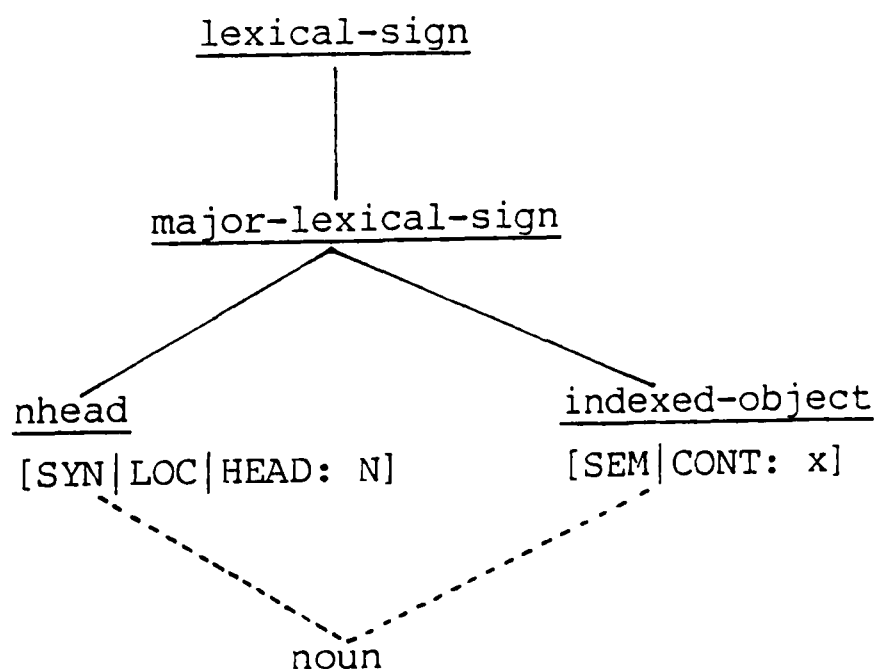
ie. there is an English lexical sign whose phonology is /dog/ and which "means" dog.

Lexical verbal signs, with their variety of VFORM, SUBCAT and AGR values, similarly contain much that is shared by many other signs, and a minimum of information that is specific to each specific putative lexical entry.

Pollard & Sag(op.cit:197ff) employs the subsumption relation to great effect in structuring the lexicon, in which a hierarchy of types inherit sets of attribute-value specifications from the

supertypes that subsume them, and pass on other such specifications to subtypes they themselves subsume. In order to achieve this, a range of feature structure types is set up, thus sign, lexical sign, syntactic-category, head etc., written in lower case and underlined to distinguish them from AVM attributes. Secondly, each feature structure type is associated with a set of attributes appropriate to that type. For example sign has the attributes PHONOLOGY, SYNTAX and SEMANTICS, syntactic-category has the attributes LOCAL and BINDING. The set of feature structure types can be partially ordered by subsumption, so that one type is a sub-type of another, but itself a super-type of a third. Any type inherits all the attribute-value specifications inherited from all its supertypes, and passes all of its specifications -- its own and those it inherits -- to all of its subtypes. Finally, a type can be subsumed by more than one (super)-type, and as a corollary, may inherit from more than one (super)-type. Represented graphically, type subsumption in the lexicon is not a simple branching tree in which each type is "dominated" by a unique node. Rather, a network of subsumption relations is permitted. In this way, all the shared information need be specified only once, and is inherited through the hierarchy of types.

(1.98)



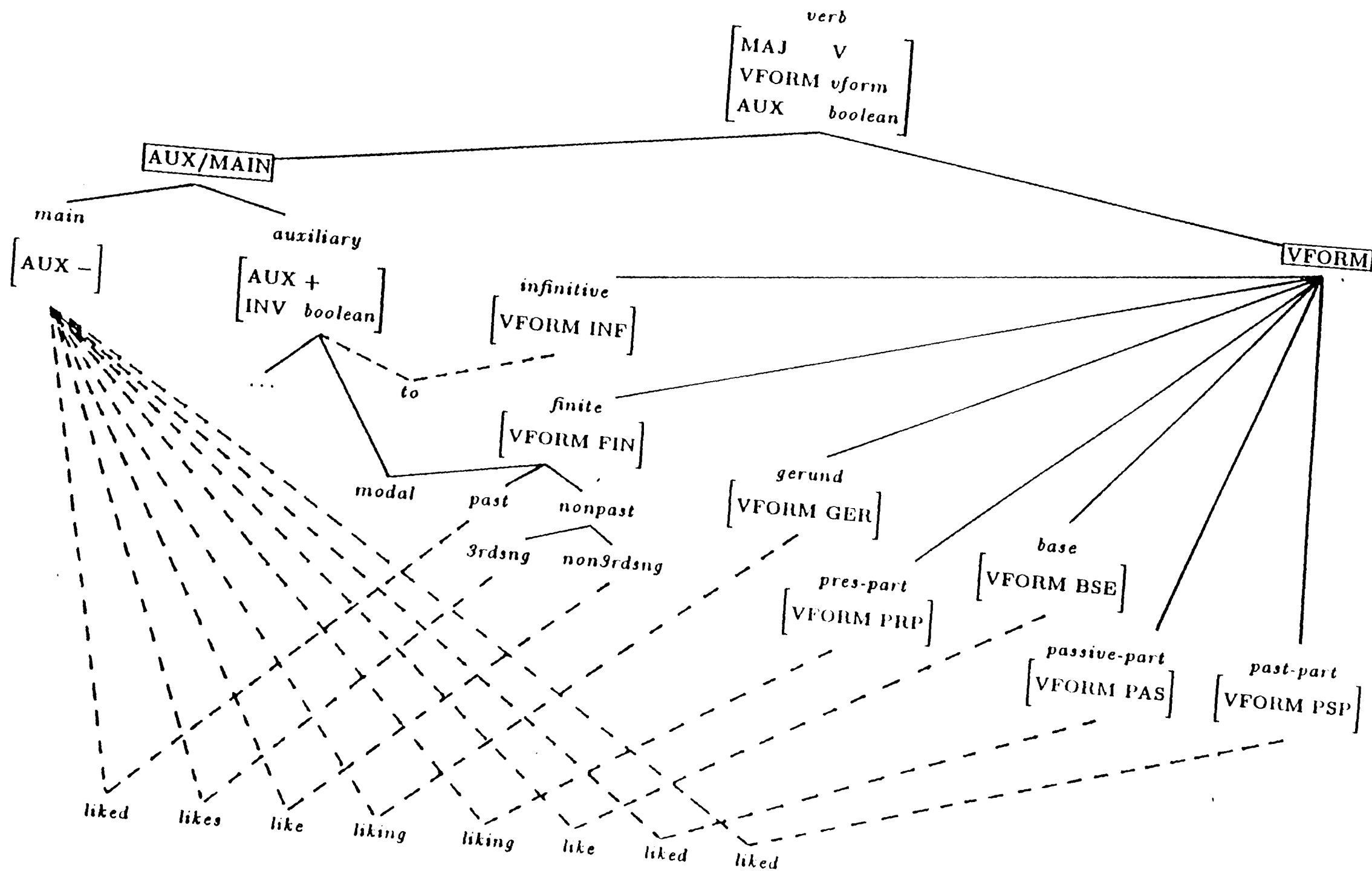
In (1.98) for example, the type noun is a sub-type of

major-lexical- sign, whose attribute SYN|LOC|HEAD is typed to nhead and SEM|CONT to indexed-object.

That is, every noun sign inherits its syntactic and semantic specification types from those supertypes that subsume it, and only idiosyncratic information need be specified on the noun-sign itself.

(1.99)

(1.99)



As a more complex example of this inheritance hierarchy, consider the cross classification of major lexical signs by HEAD and SUBCAT in (1.99), reproduced from Pollard & Sag(1987:206). The vertical inheritance hierarchy is shown in solid lines, with dotted lines connecting instances to the types they belong to, for visual clarity.

Such hierarchies, which are networks of cross-classifying types rather than simple trees, permit what would be redundantly specified on large numbers of individual signs to be factored out, with the result that lexical signs are rather minimal specifications of what is idiosyncratic.

The lexicon is also the natural repository of all 'horizontally' shared information; that is, information common across all morphological regularity, and there is a tacitly accepted tradition in linguistics of accounting for this via lexical redundancy rules (Stanley 1967, Jackendoff 1975, Bresnan(ed), 1982). Specifically, here is where phonological regularity, the relationships within semantic content, and semantic role assignment are specified by lexical rules. For example, (1.100) gives the rule, from Pollard & Sag(op.cit p.210), which produces the 3rd person singular present tense vform, 'goes', 'walks' etc, from the base vform.

(1.100) 3rd singular inflectional rule

$$\begin{array}{ccc}
 & \text{fn}(3\text{RDSNG}): & \\
 \begin{array}{c} \left[\begin{array}{l} \text{PHON [1]} \\ \text{SYN|LOC|SUBCAT: [2]} \\ \text{SEM|CONT: [3]} \end{array} \right] & \text{---->} & \begin{array}{c} \left[\begin{array}{l} \text{PHON: fn}(3\text{RDSNG}):([1]) \\ \text{SYN|LOC|SUBCAT: [2]} \\ \text{SEM|CONT: [3]} \end{array} \right] \\ \text{base} & & \text{3rdsng} \end{array}
 \end{array}$$

The interpretation here is that the function 3rdsng takes a sign base[] as input, and outputs via unification with the information inherited from type 3rdsng, the appropriate

phonological form in final /s/. The arrow $|--->$ is used to associate pairings (Shieber, 1987:22).

As a second example, consider the Passive Lexical Rule (Pollard & Sag, 1987:215), broadly similar to other current, non-transformational theories.

(1.101) Passive Lexical Rule

$fn:(PASSIVE):$

<u>base & trans</u>	PHON: [1]	
	PAST-PART [2]	
	SYN|LOC|SUBCAT <...,[] [3], [] [4]>	
	SEM|CONT [5]	

$|--->$	PHON $fn_{(PSP)}: ([1],[2])$	
	SYN|LOC|SUBCAT <(PP[BY] [4]), ..., [] [3]>	
	SEM|CONT [5]	
	<u>passive</u>	

ie. The phonology of the passive verb form is determined from the input active form by the morphological operation which creates the past participle. The "promotion" of object to subject and the "demotion" of subject to an optional by-phrase, is achieved within SUBCAT.

I will discuss the declarative formulation of such lexical rules in 2.3.4.

The effect of (1.101) on active verbs (1.102a) and (1.102c) to output their passive equivalents (1.102b) and (1.102d) respectively, is illustrated informally below.

(1.102)

- a. Lorna₂ believed₂ Gillies₁ to be insatiable₁

believe, $\left[\begin{array}{l} \text{V BASE} \\ \text{SUBCAT: } \left[\begin{array}{l} \text{V}[\text{SUBCAT:} \langle \text{NP}_1 \rangle] \\ \text{NP}_1, \text{NP}_3 \end{array} \right] \end{array} \right]$

- b. Gillies₁ was believed₁ by Lorna₂ to be insatiable₁

believed, $\left[\begin{array}{l} \text{V PAS} \\ \text{SUBCAT: } \left[\begin{array}{l} (\text{PP}[\text{BY}]_2), \\ \text{V}[\text{SUBCAT:} \langle \text{NP}_1 \rangle] \\ \text{NP}_1 \end{array} \right] \end{array} \right]$

- c. Lorna₂ persuaded₂ Gillies₁ to take off₁ his boots

persuade, $\left[\begin{array}{l} \text{V BASE} \\ \text{SUBCAT: } \left[\begin{array}{l} \text{V}[\text{SUBCAT:} \langle \text{NP}_1 \rangle] \\ \text{NP}_1, \text{NP}_3 \end{array} \right] \end{array} \right]$

- d. Gillies₁ was persuaded₁ by Lorna₂ to take off₁ his boots

persuaded, $\left[\begin{array}{l} \text{V PAS} \\ \text{SUBCAT: } \left[\begin{array}{l} (\text{PP}[\text{BY}]_2), \\ \text{V}[\text{SUBCAT:} \langle \text{NP}_1 \rangle] \\ \text{NP}_1 \end{array} \right] \end{array} \right]$

Finally, note the way in which multiple subcategorisation can be dealt with. GKPS handled multiple subcategorisation by entering a lexical item, for example 'give', under two categories in the lexicon, namely [V3] and [V5], with SUBCAT specified as $\langle \text{NP}, \text{PP}(\text{to}) \rangle$ and $\langle \text{NP}, \text{NP} \rangle$ respectively. The semantic interpretation of [V3]s and [V5]s are to be related by a meaning postulate.

HPSG, on the other hand, can posit disjunct SUBCAT stacks within a single lexical entry:

(1.103)

$$\left[\begin{array}{l} \text{SYN|SUBCAT:} \left[\begin{array}{l} (\text{PP}(\text{to})_2, \text{NP}_1) \\ \vee (\text{NP}_1, \text{NP}_2) \end{array} \right] \\ \text{SEM|CONT:} \left[\begin{array}{l} \text{REL: give} \\ \text{ROLE}_1: 1 \\ \text{ROLE}_1: 2 \end{array} \right] \end{array} \right]$$

The equivalence of semantic interpretation of the two subcategorisations then is an automatic outcome of the formalism.

1.3. A BRIEF EVALUATION.

In this section I do not attempt a full evaluation, but note only some points of especial interest a propos the present work.

1.3.1. Recent trends towards a monostratal model.

In recent years transformational grammar has moved consistently towards restricting the power of the transformational component, until a single Move α rule remains -- which is, however, still very powerful. Oehrle, Bach & Wheeler(1988:8) attributes much, largely unacknowledged, impact here to Richmond Thomason's work of 1974 and 1976 (GKPS 1985:182 acknowledges this too), which demonstrates the possibility of coherent semantic alternatives to purely syntactic and transformational analyses, by employing meaning postulates, for example. Thomason(1974:712) claims that the Montagovian integration of syntax and logical semantics permits a more surface-based syntax in which the distinctions of deep and derived structure is lost. Brame (1978) was undoubtedly germinal in this trend, too, as Stockwell(1980:158) asserts.

GPSG is one of a number of recent models representing the extreme position, in which transformational power is reduced to

zero, and a grammar has only a single generative (PS) level. Its elaboration of a coherent feature system is one of the central features by which GPSG achieved its goal, allowing the syntax to be reduced to a number of rule schemata which were "fleshed out" by instantiating feature values in accord with various principles: Feature Cooccurrence Restrictions, Feature Specification Defaults, and the Head Feature and Foot Feature Principles. While this permitted in principle a greatly simplified syntax, the detailed instantiation of local trees became an exceedingly complex business, and it still resulted, for English, in a large number of rules: GKPS(1986: 247ff) lists approximately sixty ID rules, and six metarules. Furthermore, the incorporation of metarules undermined its insistent claim to be parsimonious in terms of generative power. Finally, the demonstration that human languages need not be wholly context-free, cf. Culy(1985) and Shieber(1985) vitiated its vigorous drive for a CF-PSG framework.

Unification Grammars, by concentrating on the process of unification of information structures of least specific categories H and C (Head and Complement respectively), permit dramatic further simplifications of syntax. GKPS had already moved from the concept of rewrite rules to that of node admissibility constraints, in which immediate dominance and linear precedence relations were factored out from each other, and derivational trees were replaced by a sequence of local trees which had all to meet a set of complex instantiation constraints, so permitting the resulting rule schemata each to generalise over a number of strictly defined PS rules. HPSG uses unification to replace this highly complex instantiation process, and reduce drastically the number of rules. A consequence of the move to a fully declarative framework is that the familiar structural trees are now a metaphor in derivational terms of the declarative, reversible statements of unified signs.

Unification is itself, however, a very powerful operation, certainly taking such grammars out of the domain of CFGs,

although Pollard(1984:2,9,14) claims that his Head Grammar with a head-wrapping operation only slightly exceeds CFGs in power. This is a debatable claim, but one which won't be pursued here. Horrocks has suggested that "... a fruitful line of research ... will be the precise determination of the extent to which more powerful descriptive apparatus is in fact needed ..." (Horrocks, 1987:280). The application of unification grammars, to the investigation of natural language is one avenue to be explored, and meantime I accept the utility of adopting a monostratal, if not thereby thoroughly parsimonious formalism.

1.3.2 HPSG and X-Bar syntax.

A number of theoretical issues proved to be thorny problems for X-Bar syntax, see Cann(1987:1-5). These include the lack of a coherent, principled explanation about the theoretical number of bar levels; the degree of (non-)parallelism of projection levels across (major) categories; the redundancy of non-branching structures; and the relationship of bar-level between mother and daughter. In HPSG's unification framework, these questions just never arise (Sag, 1986:20 speaks of the "replacement" of X-bar theory). The number of categories in a head's SUBCAT feature (Sag 1986:20), and LEX (Sag & Pollard 1987:11) are roughly partial equivalents to bar-level. Thus, $[SUBCAT< >] = X^{\max}$ (note that in HPSG the category S is the maximum projection of VP); $[LEX: +] = X^0$; and in general $[SUBCAT<...[]_n>] = X^n$ approximately.

1.3.3 Some Other Attractions of HPSG.

HPSG is a simplification of GPSG in (i) the instantiation of features for a fully specified local tree (Sag & Pollard 87:3); (ii) the fewer rule schemata, because of the re-working of subcategorisation within the lexicon; (iii) the elimination of meta-rules operating within the syntax in favour of lexical rules: the lexical head constraint on meta-rules in GPSG was a stipulation, whereas its HPSG analogue (the Gap Introduction Principle) is a mechanism of the grammar which automatically

ensures that only a subcategorised-for complement can be gapped; (iv) the simplification of the Head Feature and Foot Feature Principles in a revised Head Feature Principle (although the formulation of this within the chapter is clearly inadequate), and Binding Inheritance Principle.

Note also the potential for a piecemeal accumulation of partial information, which can be flexibly consulted in processing.

Another attraction of HPSG (and other current unificational theories) is the tri-modal nature of the sign: PHONOLOGY, SEMANTICS and SYNTAX are together components of any sign. Fenstad et al(1985:15) note that "all semantically relevant aspects of the linguistic form of an utterance as well as contextual factors contribute to a pool of constraints which determine the meaning of the utterance" and "there is no asymmetry between interpretive and generative components." (quoted in Sag & Pollard 87:8, fn). Rather than an autonomy of syntax, unificational frameworks all place these three components on an approximately equal footing in the grammar.⁶

Not only so, but a uniform notation -- the AV formalism, and a declarative, and unificational approach -- permits a single

6. In fact, an earlier incorporation of these three attributes in a single "sign" must be attributed to Pike's tagmemic model. It is worth noting that the disdain paid to that 'declarative' rather than 'explanatory' model, with merely an ornate phrase structure formalism (see Postal's (1964) criticisms) has now turned almost full circle. It is not germane to our present scope and interests to pursue the evaluation of Postal's criticisms, but it seems likely that a modern evaluation of tagmemics would decide it is a formalism equivalent to modern monostratal theories, although of course, without the insights of the unification operation, and probably still open to Chomsky's(1965:205) criticism that models of the structuralist era never came to grips with the creative, or generative, aspect of language.

operational schema in the lexicon, in phonology and morphology, in syntax and in semantics.

A further attraction of HPSG is that matters of Control are generally resolved automatically by the formalism. (See Pollard 1985:15 for this explicit claim). Thus, the controller is always the category immediately following the controlled category on the SUBCAT stack of a lexical head-sign. Note again, that raising verbs do not assign any role to their controller, which is indexed to the appropriate argument of the raising verb.

Yet another attraction is that empty categories are not generated for every missing ("pro-drop") constituent; only missing categories which are subcategorised for, introduce empty categories. Note Brame(1978), quoted in Stockwell (1980:358) speaking of "an excess of theoretically elaborate devices, such as trace and empty nodes." [See also Pollard 1985:20f,23f,26) and Cann,1984, and 1987:12]. In an extreme "pro-drop" language like Hadiyya, where many gaps are free (see 3.1.2.3.3), this will emerge as an aesthetically pleasing part of the formalism.

Again, the ordered transfer from the SUBCAT stack to a Binding Stack achieves the general prohibition on crossed serial dependencies. (See Pollard 1985:24, and also Sag & Pollard 1987:6). An ordered binding stack in this thesis will still achieve this for subject stringing in Hadiyya Switch Reference constructions, see Chapter 6.2.

This completes the introduction to HPSG notation, in which the only revision introduced was to label the role values with numerical subscripts.

ADDENDUM.

Several of the principles of HPSG have not been formulated in a

declarative framework; for the sake of completeness, I will include some of these here.

(1.104) The Gap Introduction Principle (GIP)

[DTRS headed-structure[]] ==>

$$\left[\begin{array}{l} \text{SYN:} \left[\begin{array}{l} \text{LOC|SUBCAT: } \langle \dots \rangle \\ \text{BINDG: } \langle [1] \rangle \end{array} \right] \\ \text{DTRS|HD-DTR|SYN|LOC|SUBCAT: } \langle [1], \dots \rangle \end{array} \right]$$

ie. There is a sign which has a category on its BINDING attribute, such that the same category is subcategorised-for on its head daughter.

(1.105) The Binding Inheritance Principle (BIP)

[DTRS headed-structure[]] ==>

$$\left[\begin{array}{l} \text{SYN|BINDG: } \langle [1] \rangle \\ \text{DTRS|HD-DTR|SYN|BINDG: } \langle [1] \rangle \end{array} \right]$$

ie. Mother and head-daughter have the same value for the attribute BINDING.

By the GIP and BIP, dislocated constituents are introduced into the production or parse, and transmitted between mother and daughter, respectively. To complete the analysis of unbounded dependencies, the so-called linking rules must be declaratively formulated. These unify gaps with suitable filler categories.

(1.106) Linking Rule.

[DTRS headed-str[]] ==>

$$\left[\begin{array}{l} \text{SYN|BINDG: } \langle \rangle \\ \text{DTRS:} \left[\begin{array}{l} \text{HD-DTR|SYN:} \left[\begin{array}{l} \text{LOC|SUBCAT: } \langle \rangle \\ \text{BINDG: } [1] \end{array} \right] \\ \text{COMP-DTR: } [1] \end{array} \right] \end{array} \right]$$

ie. a BINDING value on a sign with empty SUBCAT can be cancelled by unification with a complement category.

It is the specification of empty SUBCAT that constrains the stage at which an unbounded dependency may be filled.

LP1 of English could be described as in (1.107a) and LP2 as in (1.107b).

(1.107)

a. LP1

[DTRS headed-str[]] ==>

$$\left[\begin{array}{l} \text{PHON: concat}([1],[2]) \\ \text{SYN|DTRS: } \left[\begin{array}{l} \text{HEAD-DTR: } [1] [\text{LEX } +] \\ \text{COMP-DTRS: } [2] \end{array} \right] \end{array} \right]$$

b. LP2

[DTRS headed-str[]] ==>

$$\left[\begin{array}{l} \text{PHON: concat}([2],[1]) \\ \text{SYN|DTRS: } \left[\begin{array}{l} \text{HEAD-DTR: } [1] \\ \text{COMP-DTRS: } [2] [\text{LEX-}], [1] \end{array} \right] \end{array} \right]$$

These are explained further in the body of this chapter.

As set-up by Pollard and Sag, the Control Principle of HPSG states that a complement which is controlled is immediately followed on the SUBCAT stack by its controlling category. Thus:

(1.108) Control Principle

[DTRS headed-structure[]] ==>

$$\left[\text{DTRS: HD-DTR|SYN|LOC|SUBCAT: } \langle [V[\text{AGR:}[1]]], C[\text{AGR:}[1]] \dots \rangle \right]$$

The above are offered, not as strong empirically based hypotheses, but as tentative, exploratory formulations.

CHAPTER 2.

MAJOR LEXICAL CATEGORIES.

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2.4. SUMMARY.

In this chapter I will consider the morphology of the noun in section 2.1, including a short discussion of the major characteristics of the Noun Phrase in 2.2, and the Verb in section 2.3. In this connection, note that as long ago as 1975, Lightner could insist

" ... significant progress in the study of semantics and phonology -- and probably also of syntax -- cannot be made without concomitant study of derivational morphology." Lightner(1975:617).

In re-affirming this, I would extend his remark to cover inflectional morphology also. In what follows, I will first cover the descriptive details, and then set out an attribute-value system applicable within the HPSG model. I will also pursue a little, how a declarative, unificational morphology might operate; see Broe(1988) and Hoeksema(1985).

2.1. THE NOUN.

In this section, the Number(2.1.1), Gender(2.1.2), and grammatical Case(2.1.3) systems of the Hadiyya noun are covered, and in (2.1.4), after this overview of these categories, I will discuss values of the HEAD attribute. 2.1.5 will deal with attributive modifiers to the noun phrase. There are no previous, commendable works on these nominal categories in Hadiyya, or even HEC, formerly Sidama, in the older literature. Apart from Hudson's (1976) brief remarks, other recent references are concerned with Cushitic as a whole, and its relationship to other branches of Afroasiatic: thus Castellino(1975) on gender, Castellino (1978) and Sasse(1984a) on Case, and Zaborski (1986) on number. These are mostly based on the partial, language-specific treatments afforded in older work, and data on Hadiyya is minimal.

2.1.1. Number.

The number system is complex, and I will limit the present discussion to its broad generalities. A noun potentially can

have a variety of number forms, illustrated by fella2- 'goat' and k'orošo2- 'maize-bread.'

(2.1)

- | | | | |
|----|---------------|---------------------|--------------|
| a. | fella2a | /fella2-a/ | indefinite |
| b. | fellakkicco | /fella-kk-icc-o/ | singulative/ |
| | ~ fella2icco | | diminutive |
| c. | fella2uwwa | /fella2-u-ww-a/ | plural |
| d. | fellakkicca2a | /fella-kk-icc-a2-a/ | paucal/ |
| | | | diminutive |

(2.2)

- | | | | |
|----|-----------------|------------------------|-------------|
| a. | k'orošo2o | /k'orošo2-o/ | indefinite |
| b. | k'orošokkicco | /k'orošo-kk-icc-o/ | singulative |
| c. | k'orošuwwa | /k'oroš-u-ww-a/ | plural |
| d. | k'orošokkicca2a | /k'orošo-kk-i-cc-a2-a/ | paucal/ |
| | | | diminutive |

The underlying forms given above between slash brackets display a rather complex derivation, which can be defended diachronically, but the extent to which such complexity forms be part of the lexicon in the synchronic language is debatable. The root is taken here to be fella2-, k'orošo2- although in (d), there is no glottal but a final suffix -a2a, perhaps suggesting that roots fell-, k'oroš- or stems fella-, k'orošo- would be preferable. In (b) the alternation of kk with 2 is apparently a reflex of masculine gender marking, now redundant. Singulative marks the individual, and is a term preferred over singular; it carries implications of particularity in discourse reference, and it is likely this that underlies the labels "definite" (Stinson 1976:150) and "particular" (Bliese 1981:175-180 for Afar). Paucal (d) is a fairly uncommon number category in natural language, but Hadiyya is by no means unique in East Cushitic in carrying the distinction; See Hayward(1984b) and Zaborski(1986). As other examples, note handarekkicca2a 'pigeons', dabbokkicca2a 'pieces of bread', antaabakkicca2a 'small chickens'. Corbett & Hayward(1987:17f) imply that only Bayso among East Cushitic languages marks the distinction systematically, but it does occur in Hadiyya, with the mixed

singulative-collective marking noted here. (d) is clearly secondary, in the sense that it combines affixes for both singulative and indefinite (see Kurylowicz, 1964 on 1^o and 2^o functions). Note that the singulative ending itself has the secondary function of marking diminutive. Zaborski refers to my indefinite as "collective", a minor difference. The category plural has wider implications than found in more familiar usage, being often used with a distributive reading; this probably underlies Stinson's according it a notion of indefiniteness.

How many forms¹ there are is a question specific to each noun, and its derivation (for example, deverbals require separate treatment, not included here), but many have three forms, which we can label singulative, indefinite, and plural. Thus:

(2.3)

singulative	indefinite	plural	

minco	mine	mineewwa	'house'
goticco	gota		'hyena'
manco	manna		'man'
mancicco			'small/ effeminate man'
fellakkicco	fella2a	fella2uwwa	'goat'
arasicco	arasa	arasuwwa	'wheat'
kinco	kine	kinnuwwa } kineewwa }	'stone'
c'ii2icco	c'ii2a	c'ii2uwwa	'sm. bird'

1. Zaborski(1986) depends heavily on previous literature; in the case of Hadiyya, on Plazikowsky-Brauner, who is poor in the transcription of vowel and consonant length. This has led Zaborski into conflation of morphemes that are not, in fact, phonologically identical, and the false separation of forms that should be phonologically identical. I will not attempt to comment on detail on the range of singulative, indefinite and plural forms he therefore reports, leaving this to a forthcoming morphological study.

As already noted, the ending -(i)c(c)o² explicitly marks the individual item (or singulative). This is particularly clear in examples such as arasicco 'a grain of wheat', wo₂icco 'a drop of water', maaricco 'a single piece of meat', being non-count nouns, but is also seen in manco 'man, person', meenticco 'woman' etc. In some cases the singulative ending has diminutive rather than singular sense, as in minco 'a small house'. The formative has cognates in all HEC languages, and the singulative category itself occurs generally throughout East Cushitic; Zaborski (1986:291f).

The ending -(V)wwa is an explicit plural, and its extensive use as general plural marker is most probably an innovation in Hadiyya, although Zaborski (op.cit:295) is able to identify it as a reflex of a form that goes back to proto-Cushitic. (See also, Sim 1986). Most plurals take a back vowel u in the plural marker, -uwwa, but a few take their own stem final vowel; following 2, there is always a close back vowel. The form often carries a distributive sense, for example, with non-count nouns, such as arasuwwa 'wheat' (distr) from the indefinite arasa, maalluwwa 'meat' (distr), from the indefinite maara. It is not easy to determine what the number system of the proto-language was like, but if the extensive use of forms in -wwa are indeed innovations, then the proto-system may have consisted simply of a basic opposition of indefinite vs singulative. More plausibly, even the proto-system would have included marked plurals.

The indefinite form may be regarded as unmarked semantically; a substantial sub-group of nouns are unmarked morphologically also, being of the form ROOT + V. The other sub-group has the word-final sequence -V₂V, which is fairly common in Hadiyya, and which I regard as morphologically marked. (This would seem to be an archaic form in systemic opposition to the singulative, although note that realisation of a copy vowel across the

2. The variants are conditioned, -c-o /C[+nas] __, and -i-cc-o /C[-nas] __.

glottal is not commonly found in Kambaata and Libido: Hadiyya has innovated by restricting the second vowel to be a copy of the preceding one). Thus:

(2.4)

fella2a	goat(s)	cf. fella2uwwa, formally plural
mirgo2o	ox(en)	cf. mirgo2uwwa, formally plural
joke2e	finger millet	
antaaba2a	hen(s)	
handare2e	pigeons, doves	
k'ure2e	small cooking pot	
gawje2e	three cooking stones	cf. gawje2uwwa, form. plur.
bobbe2e	ankle / tarsus	

Note that at least some of these can take the explicit plural.

2.1.2. Gender.

Gender has been almost completely lost from Hadiyya, only singular nouns with human female referents retaining any grammatical gender, which is seen largely in their Case-marking (2.1.3) and subject-verb agreement (3.1.2.5). Although gender-sensitive demonstratives exist (2.2.2), speakers use the masculine form indiscriminately with nouns denoting either gender. Most singular nouns are treated as masculine, whether animate or inanimate (using the terms "masculine" and "feminine" in their intuitive sense here, which can be justified by their use with human male and female referents respectively).

The special case, meenticc goticco 'female-hyena', for example, where the first, modifying, or adnominal, noun marks the phrase as feminine; the basic lexical denotation of meenticco is to the human female. Note here also, an attributive word which contributes to the head features of the mother node. I take this up later in 2.2.3.

Historically Hadiyya was not like this. Almost certainly the proto-language exhibited a system of gender polarity, as is the

case with other (East) Cushitic languages. (See, for example, Tucker & Bryan, 1966:508, 513; Castellino, 1975; Hudson, 1976:252; Hetzron, 1980:19; Oomen, 1981:54f; Hayward, 1984:139). In such a system, a masculine singular noun becomes feminine in plural, and a feminine singular noun becomes masculine in plural. [Note, however, that a symmetrical system is not essential; Hayward & Corbett, 1988:265 note for Afar "there is no distinction of gender in the plural."] Hence, the number and gender systems are partially interdependent. The confusion this can cause for analysis is seen in Zaborski (1986); for number and gender in HEC, see especially (op.cit:219-244). Most of the forms in t that he identifies as marking number, I would prefer to mark feminine gender, but admittedly this might be nothing more than a disagreement over which function is primary, and which secondary. Compare Hayward (1984:131f, 159-183). It is commonly agreed that the old Cushitic gender system marked masculine with k and feminine with t (Tucker & Bryan, 1966). Relics of this system in Hadiya can be seen in the presence of a segment k or t in some nominal stems, See (2.5), (And in the k/t apophony noted in 2.2.1 below in discussing demonstratives). This is currently a productive process in Kambaata.

(2.5)

fellakkicco	'goat'
antaabakkicco	'hen'
fugakkicco	'craftsman'
handarekkicco	'pigeon'
k'ooranta	'crows'
humaanta	'ground hornbill'
uggaata	'whey'
meenta	'women'

In the modern language such segments can no longer be considered to be gender markers, and as already noted, gender is revealed in Case marking and agreement patterns. Evidence that a form of gender polarity was operative at an earlier stage in the devel-

opment of Hadiyya is also seen in subject-verb agreement, as will emerge in 3.1.2.5.

2.1.3. Grammatical Case.³

The citative form is the Absolutive, most Cushiticians avoiding Accusative for several reasons. See, for example, Castellino (1978); Hayward(1984:235); Hetzron(1980:15); Hudson(1976:253); Owens (1985:98); and Sasse(1984a:111f). Bliese (1981) is an exception, probably conditioned by the framework in which he worked. Gragg(1976:182) speaks of the "base" form, and Andrzejewski (1960:65) of "simple Case." I shall follow the majority in using Absolutive.

Reasons for adopting the term for Hadiyya include the following. First, it is the citative form, being the one which is obtained from elicitation and the one required for lexical entries. (This is a simplification, and applies when the head is a noun or adjective; for heads formed on demonstrative and relative-verb heads, see details in 2.2.2). Secondly, it is the grammatically unmarked Case, with the Nominative being marked by final i, which is normally realised phonetically only as a palatal gesture of release. Thirdly, it is the default Case, in

3. A comparison with Hudson(1976) will reveal that I disagree radically with his very brief remarks on the morphological marking of Case. Hudson failed to note geminate vs ungeminate n, and to note the presence of a final vowel in Case-marking formatives, both of which are distinctions crucial to understanding Case-marking in Hadiyya. In justification of him, it must be noted that the presence and quality of final-vowels is not a trivial problem in Hadiyya. In isolation there is heavy devoicing and shortening, with elision in connected speech, and consonant gemination preceding such vowels is also rather elusive auditorily. Similar remarks can be made concerning Plazikowsky-Brauner (1960)'s notes on Case. In addition, her "labile Kasus" confuses Dative and Comitative /Instrumental, and some of her analysis is confusing, misleading, or simply wrong.

which various adjuncts appear which are unmarked for any other Case. See below, 2.2.2, where demonstrative attributives occur in either Nominative or Absolutive-cum-Oblique forms. These point a contrast, of course, with the perhaps more obvious term, Accusative, in that the latter is generally not the unmarked, citation form.

It is for reasons such as these that Absolutive is the preferred term, but it should be clear from what is said here that there is no implication that Absolutive and Ergative are to be paired in contrast to Nominative and Accusative. There is no evidence of ergativity in Hadiyya, nor, so far as I know, in other East Cushitic languages. Compare Hayward & Corbett(1988:268) where Absolutive subjects are found in Afar -- but in conjoined NPs, and to be explained without resort to ergativity. Nor does use of this term imply any form of alignment with Anderson's (1971), and (1977) work, in which nominative, absolutive and ergative have their specific definition within his localist system.

The Absolutive occurs with final a, o or e vowel. No noun with final u is known. Compare Hetzron(1980:15), who postulates for proto-Cushitic that Absolute Case was marked by $-\ast a$.

(2.6)

Absolutive	Nominative	

meenticco	meenticco	'woman'
meenta	meent ⁱ	'women'
landicco	landicco	'girl'
landa	land ⁱ	'girls'
manco	manc ⁱ	'man'
manna	mann ⁱ	'men'
mine	min	'house'

Feminine nouns retain their Absolutive final vowel in Nominative. In the Nominative of masculine nouns, the ending phonetically consists of a palatal gesture in the release of the stem-final consonant, at least in deliberate speech. In (2.6)

this is shown as a superscript i, although in general I will not write this in data. It is frequently suggested that historically an -*i vowel marked (masculine) nominative. (Hudson 1976:253; Hetzron 1980:14f; Sasse 1984a; Appleyard 1988:17, note 5, and see Hayward & Corbett, 1988:271 for a different, but somewhat parallel phonologically-based dichotomy in gender in Afar nouns).

The Dative Case suffixes -na to the noun stem. Whether to analyse the penultimate vowel as part of the suffix, viz. -Vna, or as part of the stem is a point that comes up repeatedly in the following paragraphs; it will be clearer when the various oblique Case forms have all been introduced and I will return to it below.

(2.7)

mancina	'to/for the man'
meenticcona	'to/for the woman'
is aayyana	'to/for her sister'

The Ablative is formed by lengthening the stem-final vowel, and suffixing -ns optionally to the noun stem.

(2.8)

mancii(ns)	'from the man'
meerii(ns)	'from market'
meenticcoo(ns)	'from the woman'
Leega2aa(ns)	'from Leega2a' (woman's name)

The Comitative/Instrumental and the Locative overlap, are formally similar, and hence potentially confusable, but they are not identical.

(2.9)

a.	manc [^] inne	'with the man'	Com/Instr.
	manc ónne	'on the man'	Loc.
	meenticc [^] onne	'with the woman'	Com/Instr.
	meenticc ónne	'on the woman'	Loc.
b.		Com/Instr.	Locat.
	masc. nouns	[^] +i+nne	/ +o+nne
	fem. nouns	[^] +o+nne	/ +o+nne
		[^] is recessive stress	/ is dominant stress

Note first that the data reveal a difference in the phonological stress, which I have distinguished as "dominant" vs "recessive" stress. The stress system of Hadiyya has not been analysed, and these are rather intuitive labels, with "Recessive" labelling stress without high pitch, and "Dominant" labelling stress accompanied by high pitch. The second difference, which is crucially important for disambiguation, lies in the quality of the vowel which carries the recessive or dominant stress: for masculine nouns, which covers the great majority of nouns in the lexicon, the Comitative takes the close front vowel, and the Locative takes the back vowel o, or more accurately, the same vowel quality that is found in Absolutive. Masculine nouns therefore differ segmentally in Comitative and Locative Cases, as well as in the more subtle stress difference. For the rather small number of feminine nouns, the same vowel occurs in both Cases. The difference between Comitative and Locative is then the purely prosodic one of stress.

There is also an Adessive case in -een, marking 'location beyond s.th.'

(2.10)

t'arapp'ezzeen	'beyond the table'
mineen	'beyond the house'
googeen	'across the path'

There are a number of locative nouns in which the Adessive incorporates the final vowel of the noun stem, and lengthens it before the final -n, thus:

(2.11)

woroon	'below'	< woro 'bottom'
illageen	'before'	< illage 'front'
biiraan	'outwith'	< biira 'outside'

In Hadiyya, the adnominal Genitive⁴ phrase expands in the order Genitive-Head, as can be seen in the following data, in which the head is in Absolutive Case:

(2.12)

Ergoog mine	'Ergooge's house'
i beeto	'my boy/son'
ee land anna	'that girl's father'
goon ooso	'strong/male children'
manc beeto	'(a) man's son'

The Genitive is marked as a bare stem, without vocalic suffix, for both masculine and feminine referents.

Two questions must now be addressed: (i) the status of the post-root vowel, as hinted at repeatedly in the above exposition, and (ii) the status of the Case system itself.

First, the post-root vowel. Looking back over the oblique Cases, it is clear that the quality of the penultimate vowel is the same for most oblique Cases as that of the final vowel of the Nominative form, and it is preferable to set up a "construct state" using the Nominative, to which oblique Case marking is suffixed. In Locative and Adessive the situation is different.

4. I make no reference to a putative Partitive here.

In Locative, the Case marker is suffixed to the Absolutive stem. The Adessive can be formed in two ways: with the same vowel as Absolutive Case, and with the formative -een suffixed to the stem. Both Ablative and Adessive Cases require the stem-final vowel to be lengthened. (2.13) summarises the morphological forms in Hadiyya Case. The full range of vocalic suffixes is shown for the Absolutive and Nominative forms, For all other Cases, (2.13) summarises how each is derived from either the Absolutive or Nominative stem.

(2.13)

	-o, -a, -e	Absolutive
	-i, -o	Nominative, for male and female reference respectively
	na	Dative
Nom	+ :ns	Ablative
	^ + nne	Comitative/Instrumental
Abs	+ / + nne	Locative
	:n	Adessive (~ -een)

The interaction of prosodic features such as phonological stress, and vowel and consonant length, with segmental features is striking, and requires some lexical rules to incorporate this into the sign system.

Secondly, consider briefly the status of the system. In common with other studies of Cushitic languages, Bliese(1981:45f,162f), Sasse(1984a), Case declensions in Hadiyya could plausibly be considered to be confined to marking a three-term Absolutive, Nominative and Genitive system, by means of a simple vowel suffix. Other formatives are phonologically more complex, generally including consonantal segments, and these could be considered as post-positional affixes. This analysis is also supported by the fact that these suffixes cliticise to a stem in a "construct state" consisting of the Absolutive or Nominative

stem. This suggests they are post-positions governing the Absolutive or Nominative Case of the noun.

I have been hesitant, however, in setting up a class of post-positions, and while both historically and phonologically there may be some reason for positing an alternative analysis, there is little doubt that the set of suffixes illustrated above together compose a unitary system. Paradigmatic unity of a somewhat disparate set of forms is no new idea in linguistic studies. (Scollon 1985; Nichols & Woodbury 1985:7). On a more empirical note, there is an expansion of the locative which uses post-positional words, but these are in fact nothing more than a small set of positional nouns to which another noun is Adnominally dependent, and which are themselves Case-marked. Thus:

(2.14)

t'arapp'ezz	hanenne	'on top of the table'
table-GEN	top-LOC	< hane 'top'
k'ure2	woronne	'inside the pot'
pot-GEN	below-LOC	< woro 'bottom'

It will be immediately seen that the modifying noun, namely the first in each example, is in the Genitive Case.

All in all, I prefer to see the above set of affixes, and Case labels, as a unitary system in synchronic Hadiyya, and this will be the position adopted in the present thesis.

2.1.4. SYN|LOC attribute-values.

Virtually every word class in Hadiyya can function as head of NP, and I will not attempt to discuss the attribute MAJOR. In GPSG, NFORM has been used to distinguish expletive pronouns 'there' and 'it' from other NPs; neither of these has any analogue in Hadiyya. The following sub-sections will be devoted to a discussion of the person, number and gender features of the

noun in 2.1.4.1. I have not mentioned person in previous sections, but include it here for completeness, as it is relevant to later discussion of agreement features on verbal signs. In 2.1.4.2 I discuss attribute-values for Case.

The terms "masculine", "feminine", "singulative", "indefinite", and "plural" have been used informally above, and their theoretical status in the grammar of Hadiyya will be considered also.

2.1.4.1. The AGR features, Person, Gender and Number.

2.1.4.1.1. Person.

Person requires consideration of the pronominal system of the language, and the reader is referred to Sim (1986) for details. Here I will only note the following set of pronominal categories, recorded in (2.15) in Absolutive and Nominative Case, mentioning in passing that 3rd person plural is more complex than suggested.

(2.15)

Absolutive Nominative			
sing.	1	eese	an
	2	keese	at
	2res	ki2ne	ki2n
	3m	itt'	itt'o
	3f	ise	ise
	3res	isse	isse
plu.	1	neese	neese
	2	ki2nuwwa	ki2nuww
	3	itt'uwwa	itt'uww

Pending a substantive revision proposed in 4.1.5.3.1, meantime, PER = { 1, 2, 3 }. The only dubiety lies in connection with the status of the two forms marked in (2.15) as denoting respect (res). I propose here adopting RES tentatively as a further HEAD feature, and since it can co-occur with 2nd and 3rd

person forms, I will not subsume it under PERSON. For convenience I will treat it as a third gender, see also 3.1.2.5.

2.1.4.1.2. Number.

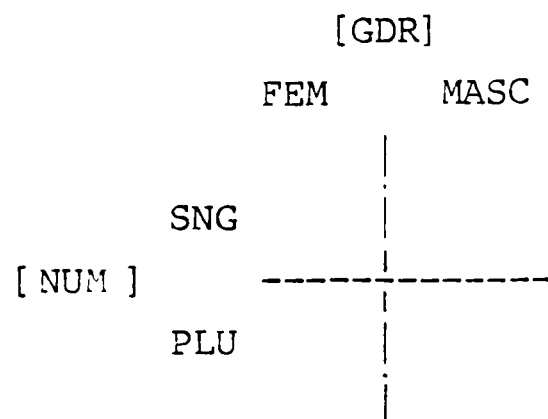
For an attribute NUM(ber), forms such as meenticco, manco, fellakicco can be specified as [SING], and all other forms listed as [PLU]. In this case, fella2a and fella2uwwa are then both [PLU], and at the present time there seems to be little reason to further distinguish them. On the other hand, a noun like hakk'a 'tree(s), wood' is genuinely indefinite, and can have reference to one or many trees. Such examples seem to require that a third value, say [IDF] (indefinite), or perhaps the empty set { } be introduced.

2.1.4.1.3. Gender.

At some stage in the development of proto-Hadiyya when gender polarity was operative (2.1.2), clearly one head feature of nouns would be a gender feature, say [GENDER], perhaps taking MASCULINE or FEMININE as values; assuming that number was marked in a similar way, then SINGULAR and PLURAL, for example, could be the values of an attribute NUMBER. Assuming, for the moment, some such feature-values, the proto-system can be partially reconstructed as in (2.16a), exemplified in (2.16b): there would undoubtedly have been morphological plurals also, alongside this polarity system.

(2.16)

a.



[FEM]

		FEM	MASC
	SNG	meenticco 'woman'	manco 'man'
[NUM]		-----	-----
	PLU	manna 'men'	meenta 'women'

(2.17) proto Hadiyya modern Hadiyya
 (gender polarity)

meenticco	FEM	(+SG)	FEM	(+SG)	'woman'
meenta	MASC	(-SG)	MASC	(-SG)	'women'
manco	MASC	(+SG)	MASC	(+SG)	'man'
manna	FEM	(-SG)	MASC	(-SG)	'men'
fellakkicco	MASC	(+SG)	MASC	(+SG)	'goat' (sg)
fella2a	FEM	(-SG)	MASC	(-SG)	'goat' (gen)
fella2uwwa	?	(+PL)	MASC	(-SG)	'goats'

The first four items offer a plausible and fairly uncontroversial reconstruction of part of the gender system of the proto-language. fellakkicco, fella2a, fella2uwwa are included to represent non-human nouns. Recall that the segment kk suffixed to the stem in the singular fellakkicco reflects original masculine gender of this form, the form fellatticco being still extant, although somewhat contrived. There seems to be no internal evidence that bears on the gender of most nouns in the proto-language, however, so that the last two, and in particular, the final item in (2.17) are uncertain.

In modern Hadiyya, only nouns with singular human female referents can be subcategorised feminine; all other nouns, whatever they denote, are masculine. Thus, meenta 'women' becomes meentⁱ in Nominative as (other) masculine nouns, and can take the same verbal form as masculine subjects, see 3.1.2.5. Additionally, when a putative masculine noun takes the singulative suffix, it is treated as a diminutive, and will require the gender value feminine. Exceptions, notably nouns denoting individual human males, eg. manco, abuullaanco, bat'aanco 'man', 'farmer' and 'worker' respectively, draw their exceptionality from the fact that the basic lexical entry is morphologically singulative, but their indexical gender is only revealed by Case and agreement phenomena.

I will follow the conventional solution, in employing an attribute [GDR] (gender), but what its values are is a less trivial question than might at first appear. We could allow it to take the values FEM and MASC, or specify one of these as a marked value, the other, simply as { }, following Sag et al(1984), and foreshadowing the discussion in 4.1.5.3, where { } \equiv M \vee F. It might even be possible to mark one gender, say FEM, and the other as \neg FEM, although what substantive status can be accorded such a negative specification is not clear to me, unless it is notationally equivalent to a binary Boolean-valued feature FEM, whose values are + and -. See 1.2.1.4.

To this point, choice among these is likely to be motivated more by aesthetic or metaphysical preference than by anything substantive from the data. Anticipating 3.1.2.4, however, I propose the following unusual solution for the lexical specification of nouns.

(2.18)

- (i) singular nouns with human female reference are specified as GDR:FEM
- (ii) plural nouns with human reference are specified either GDR:{ } or GDR:{MASC \vee FEM}

- (iii) singular nouns with human reference are likewise specified as GDR:{ } or GDR:{MASC ∨ FEM}
- (iv) all other nouns are specified GDR:MASC

I suggest that this follows the skewing that occurred in the loss of a fuller gender polarity system. See (2.17). That is, nouns which were feminine and denoted non-human entities became masculine; the only nouns which retained feminine gender were those denoting the human female. I hypothesise that singulative forms denoting humans generally took their natural gender at the time when polarity was operative. The corresponding plurals then specified the opposite to natural gender. When the polarity system was skewed, plural nouns denoting humans retained their original gender, and adopted in addition a specification of their natural gender. For motivation of this analysis, see 3.1.2.5, although its general plausibility should be apparent here. Note that meenta, for example, cannot take both masculine and feminine Nominative Case-marking; it adopts the value MASC, that is, it retains its Case-marking from the time when polarity was operative. A plural of a masculine singular noun, on the other hand, marks natural gender.

The only remaining question at this point concerns the status of disjunctive feature values in the sign. From 1.2.1.4 it is clear that HPSG following Pollard & Sag(1987) does permit this extension; the question is whether it is a well-founded one. Disjunction in theoretical linguistics has a long history, although it has largely been confined to the establishing of complete, disjunctive lexical entries. At the worst, disjunction of feature-values is abbreviatory for complete lexical disjunction; in the present example, I suggest disjunction of gender values plausibly reflects in an accurate way a disjunction of speaker-hearer competence. I therefore concur with Pollard and Sag in allowing this extension.

Finally, recall my decision in 2.1.4.1.1 to include respect forms under gender, so that GDR = { MASC, FEM, RES}. It remains to deal briefly with the cooccurrence restrictions implied among

these features, for example, that feminine gender implies singular number, and humanness, (although it is not clear that the latter is a necessary part of Hadiyya syntax, see 3.1.2.4). This is best done by FCRs, which might be considered language-specific principles, constraining in this case, the feature system; several of these might be roughly formulated as follows:

(2.19)

FCR(1) [GDR: FEM] => $\begin{bmatrix} \text{NUM: SING} \\ \text{ANIM :HUM} \end{bmatrix}$

FCR(2) [GDR: PLU] => [GDR: { }]

FCR(3) [GDR: RES] => $\begin{bmatrix} \text{PER: 2 } \vee \text{ 3} \\ \text{NUM: SING} \end{bmatrix}$

FCR(4) [GDR: MASC] \vee [GDR: FEM] => $\begin{bmatrix} \text{PER: 3} \\ \text{NUM: SING} \end{bmatrix}$

It is in the structure of the lexicon that such disjunction is organised.

2.1.4.2. Attribute-values for Case.

The same specification for Case is shared by phrasal NPs and their lexical heads, and by all conjuncts in a coordinate phrase, see examples in 4.1, [although violations can be found for pronouns in English: 'It was given to Harriet and I', 'Rae and me will get it'], and in virtue of this, CASE is clearly a head feature, with the HFP ensuring the CASE value is shared. It is well known that cross-linguistically a pronoun and its antecedent agree in person, number and gender, but not in Case, and this argues that the last is not an agreement feature. An attribute SYNTAX|HEAD|CASE will be included in a nominal sign, and surface, syntactic Case features can be simply set up, which will be the values of this attribute, as follows:

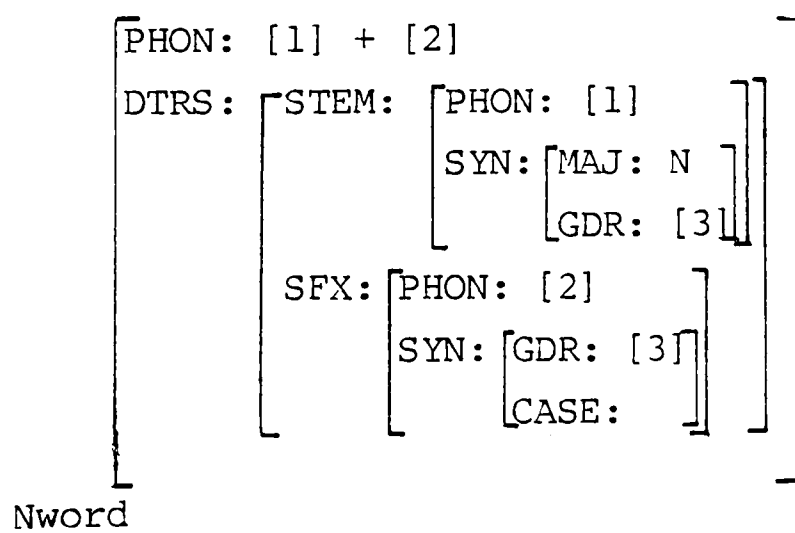
(2.20)

Absolutive	[ABS]
Nominative	[NOM]
Genitive	[GEN]
Dative	[DAT]
Ablative	[ABL]
Com/Instr	[COM]
Locative	[LOC]
Adessive	[ADD]

Also, Cases other than Absolutive and Nominative may together be termed Oblique, [OBL]. In speaking of the Cases, I shall continue to adopt capitalisation: Nominative, etc, and the full cap abbreviations when speaking of values.

Within the lexicon, lexical rules are responsible for capturing generalisations of morphological declension, and it is worth considering briefly here how such a rule might appear, which deals with Hadiyya Case forms. Signs for morphological formatives are assumed to have the same basic format as full lexical signs, and one rule, for the generation of lexical nouns, here typed as Nwords might be roughly formulated as follows.

(2.21) N-Rule



A sign type Nword then has formatives, or daughters, at least stem^[] and suffix^[], with the latter subsuming such others as singulative^[], plural^[], and is basically a concatenation of the individual phonologies. This is over simplified, of course, not taking account of morphophonological processes.

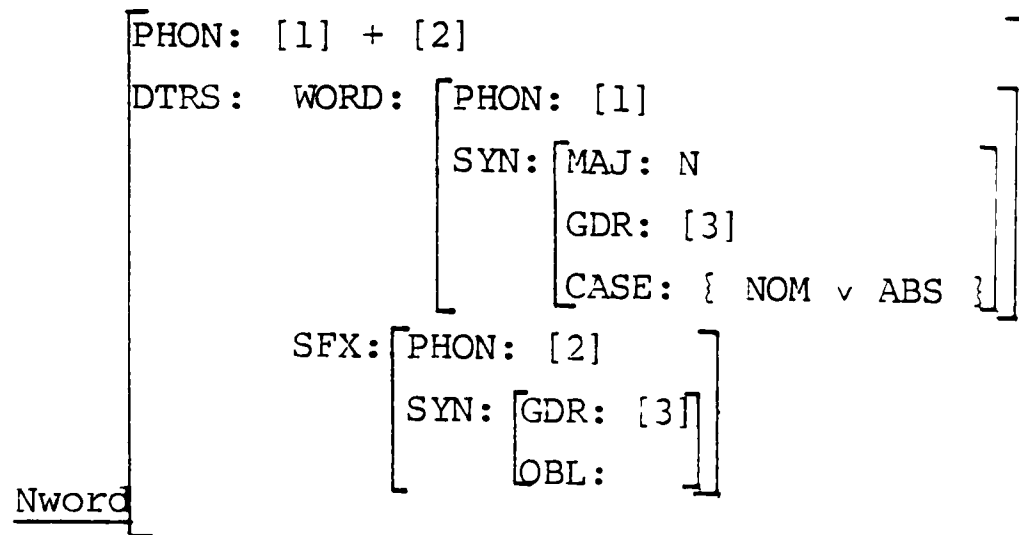
Additionally, the rule is sensitive to the syntactic features of the formatives, in this example, gender and Case features particularly. Where gender can be considered to be an inherent attribute of a stem, of course a suffix must be able to unify with that gender; this will be so for stems such as beet- 'boy' and land- 'girl', but not for bat'- 'work' from which bat'aanco 'worker' (ABS) can be either masculine or feminine gender. In these cases, gender takes no value in the stem sign, and can only be supplied by the semantic attribute. If it is a matter of pragmatics, it is apparently then not lexically marked. Grammatical Case, on the other hand, seems to be a property of the suffix.

The question arises as to how the suffix vowel is to be constrained among e, a, o, such that a particular stem selects for a particular vowel. I can see several possible approaches to this: (i) that the particular suffix vowel is subcategorised-for in the stem sign; (ii) that some AGR or CONCORD feature controls selection; or (iii) that the lexicon specifies the full Absolutive form, stem+sfx and derives the Nominative, and other Cases from that. At present my inclination is towards this last, being the most direct solution.

In 2.1.3 attention was drawn to the way in which oblique Cases are built upon the Nominative or Absolutive stems, as a kind of "construct state."⁵ A suggested formulation of this within the lexicon is given below:

5. The same phenomenon is found in Libido, and forms the major surface difference between the Case systems of the two languages, and elsewhere in Cushitic. See Castellino(1978), Sasse(1984a), Hayward(1986). This, and the concomitant phonological dichotomy seen in (2.13) support the recognition of a subset of Oblique Cases; cf. Nichols(1983).

(2.22) N-Rule: oblique-Case



It seems easiest to set up an attribute OBL(ique), whose values are { DAT, ABL, COM, LOC, ADD }. This avoids the problem of over-writing NOM or ABS by an oblique Case value, and preserves monotonicity, in that the resultant sign will carry specifications for CASE and OBL.

If, however, we make the assumption that recognition of some such construct state is not a part of the synchronic grammar, ie is not a significant generalisation for Hadiyya, the simpler over-all solution is simply to postulate a single attribute CASE, whose values are { ABS, NOM, DAT, ABL, COM, LOC, ADD }, each of which has a suffix-sign having its own Case-phonology, including the post-stem vowel.

Purely for convenience, I shall use only the attribute CASE, with values { ABS, NOM, DAT, ABL, COM, LOC, ADD }, although my present preference tends towards deriving oblique Cases from the Nominative or Absolutive forms as just suggested.

One further point: if Absolutive is the citative, unmarked Case, it might be proposed that it be treated as a default Case, and unspecified in the lexical sign, and in SUBCAT. There seems little to gain at this point, but in 3.1.2.2 the benefit will become clear. This would require an FCR,

(2.23)

FCR(5) [CASE:] => [CASE: ABS]

Finally, recall that these are surface, syntactic Cases. In various approaches to Case Grammar, semantic Case Roles often end up being a rather large, loose, taxonomic set; compare the systems of Chafe, Fillmore, Longacre, and Cook, inter alia, and the differences among them. Anderson is one notable exception, attempting to contain all surface manifestations of Case in a tightly controlled system with a locative, or localist, basis and interpretation. See also the variety of approaches to Case in Dirven & Radden(1987). The ultimate end of a taxonomic approach would seem to be that virtually every lexical verb could be considered to be associated with unique Case roles specific to the lexical meaning of that verb. It is surely preferable to adopt an approach in which semantic roles are not primitive, but an outcome of the combination of (i) the lexical meaning of a verb, plus (ii) its specific SUBCAT requirements, and to adopt a morphologically contained system.

Note that HPSG's SEMANTIC|CONTENT|ROLE_n values in verbal signs approximately parallel what advocates of Deep Case propose, but in the semantic attribute. Pairing with syntax is achieved by cross-indexing to subcategorised complements in lexical signs. Pollard & Sag(1987), as already noted (1.2.1.3), employ unique labels for each verb, thus the lexical item 'devour' is associated with the roles DEVOURER: [i] and DEVoured: [j]. There is a sense in which Case roles are uniquely defined for each lexical verb, but in doing so, one loses all generality defined across lexical items. One important consequence of this loss would be that no semantic hierarchy can be defined (see 3.1.2.2). See also Dowty(1988).

2.2. THE NOUN PHRASE.

In this section, the elements of the noun phrase other than the noun itself, are considered. Their predicative function is covered in Chapter 3.2; here I deal with their function as attributes and as NP heads. This can only be a very brief overview, omitting many details. I avoid the question of identifying different elements of NP as determiner/ specifier,

modifier or complement (Selkirk 1977), since I will assert that Hadiyya is not a language in which these identifications could be made from configurationality. The constituency status of NP can be supported by several criteria: (i) a head can be preceded by various modifying categories; otherwise there is free ordering; (ii) the head-modifier string is non-separable; (iii) there is no extraposing out of NP; (iv) heads other than nouns require modified morphology, ie. they are nominalised.

2.2.1. Modifiers.

There are various structural classes of adjective, which need not concern us, some of which at least might be considered to be a subgroup of nouns. An example of each class is shown in (2.24); lexical rules would be required to organise the morphological redundancy, following 1.2.4.

(2.24)

ROOT + V	geejja	'fat'
ROOT + aalla	siggaalla	'cold'
ROOT + aamo	danaamo	'good'
ROOT + amma	keesamma	'taboo'
ROOT + V2V	Ŷaano2o	'green'

These groups are semi-productive, the first two pair with inchoative or stative verbs, the third is derived from stative verbs and nouns, and the fourth from passive verbs.

The following is the attributive set of the demonstratives:

(2.25)

	Nom.	Abs.	
1 ^o	ku	ka	'this'
2 ^o	oo	ee	'that'

These forms are used with both singular and plural heads. In

addition, the Absolutive form is used as modifier with Noun heads in oblique Cases. Finally, note that proximal (1⁰) forms tu/ta exist, which are formally feminine, but now rarely used. The ku/ka forms are used with both masculine and feminine heads, and the tu/ta forms are most likely to be heard in the southernmost parts of Sooro speech area (see Preface); even there not consistently. In general then, ku/ka are not specified as masculine in the lexicon, but unmarked for gender, and no agreement/concord feature is specified on the noun to govern these.

(2.26)

- a. ka/ee t'arap'eza šiinše !
 this/that table clean!
 'Clean this/that table!'
- b. ku manc ka meenticcona hara2maakko
 this man that woman-to he-has-helped
- c. ku/oo heemacc iina hara2mukko
 this/that black to-me he-helped
 'This/that black one helped me.'
- d. an ka/ee heemaccina hara2munmo
 I this/that to-black I-helped
 'I helped this/that black one.'
- e. ka kašar addicco ee heemacciins bitaa2ummo
 this red calf that from-black I-bought
 'I bought this red calf from that black one.'

A form phonetically [2o2 manc⁰] could perhaps be construed as a 3⁰ deictic, 'yonder man', but native speaker intuition is against this, and the intonation has a rather unusual ballistic contour, which rather suggests it is a prosodic matter only. Note however, that the neighbouring northern HEC languages

Libido, Kambaata, Timbaaro and Alaba all possess a 3⁰ deictic element (Korhonen et al, 1986).

2.2.2. Dependency.

As with the noun, the overwhelming number of Hadiyya words are vowel-final, a, e, o. And, as I noted in the short summary of the phonology, these final vowels are much shortened.

When modifiers are in a dependency relationship to an NP head, this final vowel is not attached, and its absence marks their dependency. Thus:

(2.27)

geejj beeto	'a fat boy'	/geejj-a/	'fat'
danaam landicco	'a fine lass'	/dan-aam-o/	'fine'
sas gota	'three hyenas'	/sas-o/	'three'
dut manna	'many people'	/dut-a/	'many'

The noun heads above are given in Absolutive form, and the slash brackets record the Absolutive form of each modifier. Owing to their phonological shape, demonstratives do not fit into this pattern, which is otherwise general; being monosyllabic there can be no truncation of final vowel to mark their dependency to a head.

2.2.3. Headedness.

The dual of dependency is headedness, and I will consider this briefly here.

In recent years, syntacticians have struggled to clarify the notion 'head', and sought to make explicit how categorial identity could percolate through structural trees. X-bar syntax found one of its motivating impulses from this search, and GPSG and HPSG have both accorded special status to the constituent head. Recently however, Zwicky(1986) and Hudson(1987) have adopted somewhat conflicting positions over the identification

of the head constituent in a number of constructions, and Cann(1988) convincingly argues that headedness is not in fact, a property unique to one constituent sister, but that headedness is split. The insight is not new, however; see Bloomfield(1914: 114).

If Cann is right, HPSG wrongly accords centrality to the notion 'head'. The data Cann adduces in support of his hypothesis is drawn from English, yet has obvious implications for similar constructions cross-linguistically. In considering Hadiyya, I will first look at how headedness in the noun phrase is manifest, and then at some evidence for split-headedness.

When the nominal, defined to cover both noun and adjective, is head, the NP in Hadiyya is as discussed in previous sections of this chapter. When non-nominals, such as Demonstrative or Relative Verb, function as head of NP, they take a suffix, kk, which apparently functions as a substantiviser.

(2.28)

	Attributive	Substantive

Demonstrative	ku, ka	kukk(a), kakk(a) 'this'
	ee, oo	eekk(a), ookk(a) 'that'
Rel. Verb (m)	maru(kk)	marukkokk(a) 'who went'
(f)	matto2	matto2okk(a)
		matto2ott(e)

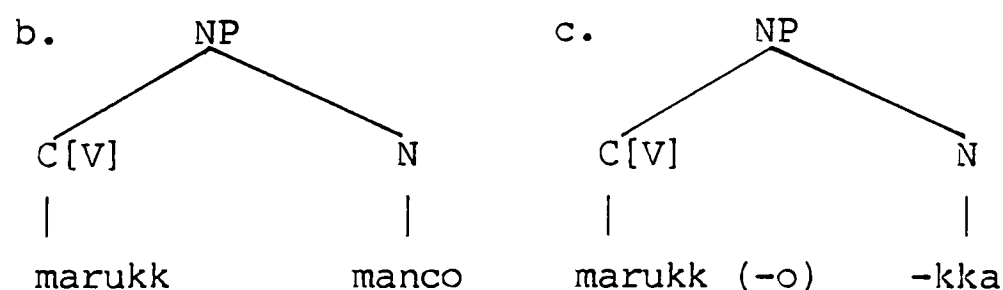
The relative verb exemplars are 3rd person, masculine and feminine respectively. The substantive forms clearly show the kk suffix, or optionally tt when the head is indexically feminine. The final (a) occurs for Absolutive and is omitted for Nominative Case.

The major formal question concerns how such forms are produced in the grammar. First, it might be held that we are dealing here with clitics, in which case we might generate forms in the

syntax, by application of the phrase structure rule (2.29a) to produce the local trees (2.29b) and (2.29c), and then cliticise these forms. If they are not clitic forms, generating in the syntax abrogates the normal lexicalist position.

(2.29)

a. NP \rightarrow C H



If it is assumed that this is a normal affixal process, it would be more conventional to assign all word formation to the lexicon. This still leaves the question as to how the sign might be marked as a form dependent on a head outside of itself, or itself marked as head. [In fact, the middle position, that normal affixation can be handled within the syntax, is no problem for HPSG, since the sign and the unification operation are uniform throughout the grammar].

I propose setting up a feature HFORM which can have values + and -. NP modifiers such as Determiner, Relative Clause, will be specified as [HFORM: -] when they function as modifiers to a head noun, and as [HFORM: +] when they are themselves head. This is not only motivated by the immediate concern of specifying head vs dependent function here, but will be further motivated in section 3.2.2. In passing, note that the same feature will allow HPSG to treat both dependency marking languages like Hadiyya, and head marking languages like Lakhota, see van Valin(1985).

Turning now to look briefly at evidence for non-unique heads, consider the following.

hund- 'all' can occur in pre-nominal position in the NP, thus hund manna 'all people.' It can also occur, and more commonly does so, in post-nominal position:

(2.30)

- a. mann hundam 'all people' (Abs)
- b. mann hundim (Nom)

In such examples, what is the phrasal head? There is evidence to support the claim that it is the quantifier; first, mann is not in Absolutive form in (2.30a), but either in dependency or genitival relationship, and, secondly it is the quantifier that is marked for Absolutive vs Nominative Case. This second point is affirmed by data in oblique Cases, where it is clear that it is the quantifier that generally carries the Case-marking.

(2.31)

- a. mann hundinam 'to all people' (Dat)
- b. mann hundiinsem 'from all people' (Abl)
- c. mann hundinnem 'with all people' (Com)

Finally, it may be asserted that if hund- is identified as head, then the construction conforms to the independently established pattern of head-final constituency.⁶

6. A further question concerns the nature of the suffixed -m. A formative (or formatives) of this shape is ubiquitous in Hadiyya, and analysis is not a simple exercise. It always occurs on the final element of the phrase, although it need not be in final position - it can itself be suffixed by -d-; in some data it has coordinative force inter-sententially, and in other examples, the emphatic force 'even'. It can also occur on the final conjunct of a coordinate phrase (section 4.1.1), there replacing the long vowel. Suffixed to hund- as above, it might be considered to combine some of these uses: mark hund- as phrase-final, quasi-head element, and conjoin the quantifier with the preceding nominal. The whole question however, needs further study.

However, as well as the above evidence, it must be averred that the noun hund- quantifies is not without head-like properties. First, it is syntactically obligatory, no ellipsis of preceding nominal being permitted. Secondly, as an indexical expression, mann hundam speaks as much of 'the set of men' as it does of 'which set.' I would argue here, then, that in such phrases, both constituents contribute head properties.

The same can be argued for deictic expressions such as ku manc 'this man' or ee meenticco 'that woman'. These not only identify an individual member of a set, but also identify whether an entity is near-at-hand or far-off. Again, there is a sharedness of head properties.

A similar position can be reached over adverbial clauses, see chapter 5.1. The final nominal word does not occur alone as the sole obligatory element of the clause, but always in association with a preceding verbal constituent. Thus

(2.32)

ee ammane(nne)	'(at) that time)
	temporal adjunct
hink ammane(nne)	'(at) what time?'
	QU-phrase (= when?)
matto2 ammane	'when she went..'
	adverbial clause

In these, both elements are obligatory, and on that basis alone, it might be considered that each partially contributes to headedness.

A particularly clear illustration can be found in such phrases as the following.

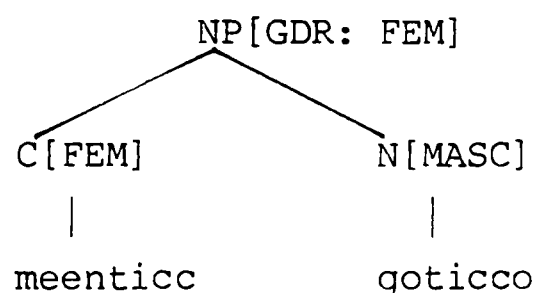
(2.33) /

meenticc	wušicco	'bitch'
meenticc	goticco	'female hyena'
goo2n	ooso	'male children'

cf. goon ooso '(the) male's children'
 < goonco 'male'(N)

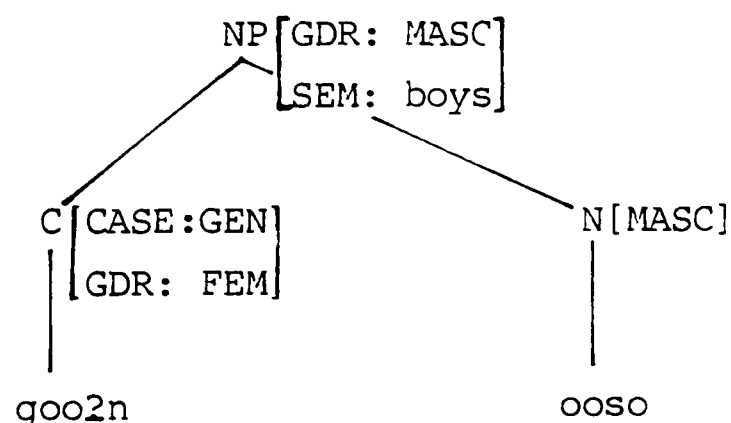
If we assume that these are syntactic phrases, rather than compound lexical items, they are interesting for the problems they raise for a head-feature analysis.

(2.34)



In (2.34), the modifying meenticc, a marked feminine, is able to overwrite the gender of goticco, determined from subject verb agreement, see section 3.1.2.5.

(2.35)



Here the modifying element is probably to be identified as being in Génitive Case; at any rate, it doesn't simply interfere with the gender of ooso, which is lexically marked as MASC; it contributes within the semantic attribute to affect the denotation of the phrase. Such examples again contribute to the

assertion that headedness is not a property to be uniquely assigned to a single constituent of a phrase.

A further piece of evidence is the double Case-marking on complex numerals; neither word alone specifies the head.

(2.36)

tommiinsii lamiinsii 'from the twelve'
ten-ABL-& two-ABL-&

In HPSG, simplifying the rule schema to $X \rightarrow Y^*$ in itself works to reduce the salience of the notion 'head'. It is the complements that are subcategorised-for in a sign that controls the expansion of the constituent string, and the adjunct principle restricts the range of possible adjuncts available in different syntactic structures. Thus far, the centrality of the head is weakened. What is required now is that the Head Feature Principle be redefined, so that it properly defines how head-like properties are passed between mother and daughters. A consideration of the data offered already in this section makes it obvious that neither an identity nor an intersection relation is adequate; at present I can see no principled way of ensuring that exactly those head features required are passed between the mother and each head constituent-daughter.

2.2.4. Order in the NP.

Except for the strong constraint that the final element is the head (subject to the qualifications on this notion introduced in the previous section), there is great freedom of order.

(2.37)

ee sas k'eraa2l landa

D Nu A N

ee k'eraa2l sas landa

sas k'eraa2l ee landa

sas ee k'eraa2l landa

'Those three tall girls'

However, the demonstrative is generally more acceptable in initial position, other placings carrying scope connotations, perhaps revealing some evidence of hierarchy, albeit semantic rather than syntactic. In that connection, consider the following also.

(2.38)

a. ee sas k'eraa2l ki landa

D Nu A Pn N

= [those [three [tall [girls-of-yours]]]]

v [those [three [tall [your [girls]]]]]

b. ee sas ki k'eraa2l landa

= [those [three [tall-girls-of-yours]]]

v [those [three [your [tall [girls]]]]]

c. ee ki sas k'eraa2l landa

= [those [three-tall-girls-of-yours]]

v [those [your [three [tall [girls]]]]]

d. sas ee ki k'eraa2l landa

= [three (of) [those-tall-girls-of-yours]]

v [three [those [your [tall [girls]]]]]

'Those three tall girls of yours'

While these elicited examples do not pursue all possible orderings, they illustrate the high degree of freedom of modifying constituents, and the only known constraint is that of the final position of the head word. The bracketed strings are a tentative attempt to show up scope differences. Here the QUANTIFIER-STORE attribute of 1.2.1 comes into its own. It is obviously unwise to investigate ordering in complex NPs via elicited data, the more so in a language whose syntax is previously unreported, and systematic investigation will proceed no further. The average complexity of natural NPs from text can be seen in the following examples.

(2.39)

- a. ee itt' molliins
that his clan-from
'from that clan of his'

- b. oo ki anginne amaddookk
that your hand-with wh-you-hold
'that which you are holding in your hand'

- c. ki2nuww k'acc k'accinam
your offspring offspring-to-&
'and to all your descendants'

- d. giiranne Šokkiisakka2a hiinc'aa2akkam
fire-on they-burn they-bring-near-&

hurbaat' kitim ..
food's sacrifice

'a sacrifice of grain which they offer and burn
on the fire'

- e. ee hurbaatiins liittakka2a ki2akka2a
that grain-from they-grind they-rise
- zayta hamaarakka2a danaam k'amika mat obbo2o
oil they-mix fine flour-of one handful
- 'one handful of that fine flour that they
mixed with oil after grinding from grain'
- f. danaamis Ÿuffaa2akka2a murakka2 k'ak'ul Ÿaan
'well-chopped raw cabbage'
- g. Annor za2leka goo2n oos hundim
Annor seed-of male children all[NOM]
'all the male children of Annoro's line'
- h. mat itt' abbaayya
one his brother
'one of his brothers'
- i. k'ebele2e sasik tiifat' min yoo2isa mo2isoo beyy
Qebele three Admin. office that-is wh-shows place
- j. ee itt' woŸ macc'eesso2 keen hundim
that his matter who-heard those all
'all those who heard his words'

It is noticeable that the longest NPs are those with fairly heavy relative clauses, (2.39e) for example; apart from that, NPs tend to have not more than three constituents. It is clear too, that even fairly "heavy" relative clauses are not postposed.

2.2.5. Formalisation.

It remains to exemplify Hadiyya nominal signs in unificational format, and to discuss the issues of their unification to form phrasal signs. (2.40)-(2.42) shows a few signs. The SEMANTIC

attribute of nominal signs was expounded only briefly in 1.2.1.3; here I simply follow Pollard & Sag (1987).

Proper nouns are clearly not simply individual constants; La2laago, for example, in (2.40) is not a unique individual, and so proper nouns are treated as indexical expressions, by means of the attribute IND whose values are VARiation and RESTRiction. By these two values a restricted parameter is specified, such that La2laago is a variable which is restricted to identify an individual from the set of individuals named La2laago.

(2.40) a proper name sign

[	PHON: La2laago [2]]
[	SYN|LOC: []
	HEAD: [MAJ: N]
	CASE: ABS]
	AGR: [PER: 3]
	NUM: SNG]
[	SEM|CONT|IND: [VAR: [1]]
	RESTR: [RELN: NAMING]
	NAME: [2]]
	NAMED: [1]]
[]

For common nouns, basically what is required is that they be treated as quantifiable indexicals. Quantifiability is dealt with via SUBCAT, which in (2.41) and (2.42) specifies <DET v GEN>. Again, IND specifies an indexical by a restricted parameter in the RELation of 'being a tree.' The entity of VAR is tagged to be the INSTance of that relation.

(2.41)

b. a common noun

[PHON: hakk'a]	
[SYN|LOC:	[	HEAD:	[MAJ: N
			CASE: ABS
		AGR:	[PER: 3
			NUM: IDF
			SUBCAT<DET ∨ GEN [3]>
[SEM:	[	CONT:	[DET [3]
		IND: [2]	VAR: [1]
			RESTR: [RELN: tree
			INST: [1]
			INDS: {[2]}

(2.42)

c. a common noun with female reference, in oblique case

[PHON: meenticconne]	
[SYN|LOC:	[	HEAD:	[MAJ: N
			CASE: LOC
		AGR:	[PER: 3
			NUM: SING
			GENDER: FEM
	SUBCAT<DET ∨ GEN [3]>		
[SEM:	[	CONT:	[DET [3]
		IND: [2]	VAR: [1]
			RESTR: [RELN: woman
			INST: [1]
			INDS: {[2]}

The attribute IND (indices) is intended to allow the semantics of quantifiers to be unified in. I propose saying little about the unification of constituents in NP signs: even the ubiquitous pronoun, or the demonstrative raises syntactic and semantic issues whose satisfactory resolution remains elusive, and any analysis of relative clauses presupposes an analysis of sentential forms, which is the intended outcome of Chapters 5 and 6.

Questions of pronominal reference, indexicality and anaphora properly belong in Chapters 3, 5, and 6, but are likewise far outwith the present scope. Recent work, Heny & Schnelle(1979), Kreiman & Ojeda(1980), Hankamer & Sag(1976) inter alia has elaborated on the possible non-unitary origin of such phenomena. Whether a monostratal treatment can offer solutions that a transformational approach cannot, or whether situation semantics offers the possibility of insightful generalisations remains to be demonstrated.

2.3. THE VERB.

Hadiyya displays a fairly wide variety of verbal forms; I will deal with syntactically independent (ie. S-final) forms in 2.3.1, and this will include the AGR values of person, number and gender, then in 2.3.2, with syntactically dependent (S-medial, converbial, subjunctive and adverbial subordinate) forms, and in 2.3.3, a variety of further forms. 2.3.4 will introduce negative forms, 2.3.5 will mention derived stem verbs, and finally in 2.3.6 I will discuss the attribute-value pairs posited for the tense-aspect system of Hadiyya. Thus, virtually the total range of forms will be introduced, although later chapters will concentrate attention on only some of these.

2.3.1. Syntactically Independent Verbal Forms.

In the following sub-sections, I will discuss the concord sets for the basic Perfect and Imperfect paradigms (2.3.1.1), the Imperative, Jussive, Past Perfect, Past and Present Continuous (2.3.1.2), the other syntactically independent forms in -(h)ane (2.3.1.3), and AGR values (2.3.1.4).

Person-number forms will be laid out according to the following schema:

(2.43)

1st sing.	1st plural
2nd sing.	2nd plural (& 2nd res.)
3rd masc. sing.	
3rd fem. sing.	
3rd res(pect).	

It can be immediately seen that no 3rd person plural form is recorded. This is because the basic forms used for this are formally identical to the 3rd person singular forms. The 3rd respect form can be used as plural, in which case it is strongly restricted to an unspecified subject. There are also non-basic forms with root-suffix -am-, and these are construed to be derived forms, used to mark a reciprocal or distributive effect. The old 3rd person plural can uncontroversially be said to have shifted function to that of 3rd res. (For a fuller discussion, see Sim, 1987).

2.3.1.1. Main paradigms.

The major paradigms which can effect sentence closure are covered in this section. In Table I the scatter of affirmative forms of the basic Imperfect and Perfect paradigms is shown.

TABLE I.

root: mass- 'take'	
Imperfect	'I (will) take' etc.
massoommo	massinoommo
massitootto	massitakkamo
massookko	
massitamo	
massakkamo	

(Table I contd)

Simple Perfect

'I took' etc.

massummo	massinummo
massititto	massitakko2o
massukko	
massito2o	
massakko2o	

Present Perfect

'I have taken' etc

massaammo	massinaammo
massitaatto	massitakko2ookko
massaakko	
massito2ookko	
massakko2ookko	

The root mass- 'take' has been chosen so that the suffixation forms can be inspected without the interference of a variety of assimilatory processes which affect roots terminating in a single, ungeminated consonant. (See Sim(1985) for a discussion of these). A close front vowel i, following the root is epenthetic; otherwise the rather complex tense/aspect-person-number forms are readily separable. These epenthetic vowels are inserted between a C-cluster or geminate and a following consonant, t or n, which are reflexes of a proto-Cushitic person marker, and occur in 2nd person, 3rd fem.sing. and 1st plural forms respectively. Further, note that in general these syntactically independent forms are marked by final o, while the penultimate syllable (ignoring copy vowel across glottal stop) often takes a vowel quality typical of the tense/aspect of the paradigm. Thus:

(2.44)

-oo-	marks	Imperfect
-u-	marks	Simple Perfect
-aa-	marks	Present Perfect

Both 2nd plural and 3rd respect include the formative -akk-, a non-1st person plural marker, and an innovation in Hadiyya and

Libido; and the endings of 2nd plural, 3rd respect and 3rd fem. singular are identical, and distinctive to these forms.

(2.45)

	Imperfect	Simple Perf.	Present Perf.
2pl.	-amo	-o2o	-o2ookko
3f.sg.			
3res.			

In summary, note that in general the complex person-number suffix is capable of being seen in two linear parts, each consisting of a vocalic tense/aspect marker and a consonantal person marker. This is most clear in the Simple Perfect, thus:

(2.46)

-Ø-V + mm-o	-n-V + mm-o
-t-V + tt-o	-t-akk-V + 2-o
-Ø-V + kk-o	
-t-V + 2-o	
	-Ø-akk-V + 2-o

Here, the 3rd respect form has been placed in its historical position, as a plural form.⁷ This pattern is echoed throughout the Hadiyya verbal system, as will be seen in the remainder of this chapter. The pattern of double marking in basic paradigms serves to group the HEC languages together as having undergone a group of somewhat similar developments. The system exhibits systematic relationship with other (East) Cushitic languages, which however, have not undergone the innovation of double-marking (Zaborski, 1975, 1986b).

To what extent this complexity should mark the synchronic analysis of forms is debatable. When no further detail is pertinent

7. The zero -Ø- segments have different values historically; in 1st person, -Ø- is probably a reflex of *2; in 3rd masc. it is probably a reflex of *y, and in 3rd res/plural it may have been either *y or Ø. (Bliese 1973, Hetzron 1980, Zaborski 1975).

to an argument, I will write all such forms as single, complex suffixes to the verb root, without epenthetic i, as follows, using Simple Perfect again for purposes of illustration.

(2.47)

mass+unmo	mass+nummo
mass+titto	mass+takko2o
mass+ukko	
mass+to2o	
mass+akko2o	

For a fuller discussion, and some diachronic reconstruction, see Sim(1986).

2.3.1.2. Other paradigms.

There are several other syntactically independent verbal paradigms, and I turn now to these.

2.3.1.2.1. The Imperative and Jussive.

Morphologically these do not form a single paradigm, but it is convenient to consider them together. Some support for this is offered by the following considerations. (i) the two are suppletive in person forms; jussive does not occur in 2nd person, while Imperative only occurs in 2nd person. (ii) functionally, both are used in conveying commands; jussive mediating a command through a third party.

(2.48)

----	massinona	'let's take'
masse	massehe	'take!'
massona		'let him/her/
massitona		Himself take'
massakkona		

There is no 1st person singular; Kuryłowicz(1964) justifies its

common absence cross-linguistically in terms of the modality implied.

The caveat on analysis of forms mentioned in 2.3.1.1 applies here also. For Jussive, see discussion on Subjunctive₁ in 2.3.2.2 below.

2.3.1.2.2. Complex Verb Forms.

The following paradigms are clearly subject to many of the same morphological processes seen in 2.3.1.1 above, but are complex forms. The Past Perfect and Past Continuous are complex verb phrases, consisting of Converb₁ + Auxiliary and Participle + Auxiliary respectively. The Present Continuous is clearly historically derived via the Imperfect, but synchronically is unitary.

TABLE II.

Past Perfect		'I had taken' etc.
massaa(mma) he2ummo	massinaa(mma) he2nummo	
massitaa he2litto	massitakka2a he2lakko2o	
massaa(kka) he2ukko		
massita2a he2lo2o		
massakka2a he2akko2o		
Past Continuous		'I was taking' etc.
massam he2ummo	massinam he2nummo	
massitam he2litto	massitakkam he2lakko2o	
massam he2ukko		
massitam he2lo2o		
massakkam he2akko2o		

(Table II contd)

Present Continuous

'I am taking' etc.

massoommulla

massinoommulla

massitoolla

massitakkamulla

massoolla

massitamulla

massakkamulla

In the two Past paradigms, the auxiliary conjugates in the Simple Perfect. Bracketed segments in the Past Perfect surface occasionally; the more frequent form is without these, and although the conditioning of this variation is not well understood, note the discussion under Switch Reference in Chapter 6.2. For fuller discussion of this converb form, see 2.3.2.1 below. The bracketed form (-kka) in 3rd masc. sing. of Past Perfect, and the segments apparently omitted in 2nd person and 3rd masc. sing. Past Continuous are just those segments which are also omitted from subordinate forms, see 2.3.2.3 below.

The final -(a)m suffix to the Participle in the Past Continuous is not well understood.

The Present Continuous too, shows clear evidence of being a subordinate form + Auxiliary, the latter having become encliticised to the former, but what that auxiliary was, is not obvious, unless it was the ubiquitous -- ubiquitous in Cushitic verbal reconstructions since Praetorius(1894), that is -- y- 'be present.'

2.3.1.3. Other Syntactically Independent Forms.

A slightly curious pair of paradigms with the ending -(h)ane also occurs, to which I give attention now. The curiosity consists of the way in which these stand alongside the "canonical" Cushitic paradigmatic forms outlined above in 2.3.1.1 and 2.3.1.2. -- somewhat outside that well delineated system, although clearly derived from it.

TABLE III.

Imperfect Continuous	'I take' etc.
massoommane	massinoommane
massitoothane	massitakkamane
massoothane	
massitamane	
massakkamane	
Perfect Continuous	'I used to take' etc.
massummane	massinummane
massittane	massitakko2ane
massukkane	
massito2ane	
massakko2ane	

These paradigms are obviously derived from the Imperfect and Simple Perfect respectively, and apparently the segment h is intrusive, serving to separate vowels. In essence, the paradigms are formed by replacing the final o of major paradigms with -(h)ane. Notably, there is no paradigm corresponding to the Present Perfect, which is itself secondary in comparison with the Imperfect and Simple Perfect.

The same suffix is found on predicative pronouns, iihane, niihane, 'It's mine' and 'It's ours' respectively, and this suggests that these Continuous forms are periphrastic Perfect and Imperfect Continuous paradigms, in which the suffix -(h)ane would seem to be a substantiviser of some kind, with perhaps a copular function. Clearly the forms in Table III are not simply deverbal nominalised forms, since they fully inflect for person, number and Perfect vs Imperfect aspect. In addition, they contrast with a range of fully nominalised forms, including an infinitive. I defer further discussion until 2.3.3 below.

2.3.1.4. AGR values for person, number and gender.

Since the same person and number categories will be required

throughout the Hadiyya verbal system, it is already possible to set up appropriate features. Since these are the features involved in subject-verb agreement, they will occur as values to the attribute AGR(eement).

Number is clearly going to require marking singular and plural, by some method or other; the various rather obvious ones are simple notational equivalents of each other, and, in line with decisions made for the noun in 2.1.4.1, I will adopt here the attribute NUM, with values [SING] and [PLU].

Person requires an attribute, say PER, which, pending again an alternative to be proposed in 4.1.5.3.1, selects values [1], [2], or [3], and gender an attribute GDR which selects values MASC or FEM, to which further attention will be devoted in 3.1.2.5 in discussing subject-verb agreement, and a value such as RESpect. These requirements too, are in line with what is outlined on the basis of the pronominal system in 2.1.4.1.

The FCRs set out in 2.1.4 are also relevant to verbal forms; features to cover the tense/aspect system will be discussed after all forms have been covered, in 2.3.6.

2.3.2. Syntactically Dependent Verbal Forms.

In this section, I consider the sentence-medial converb forms, the subjunctives, and the adverbial subordinate paradigms.

2.3.2.1. The Converbs.⁸

There are two converbs, which I will designate Converb₁ and Converb₂, whose sentential syntax is dealt with in 6.1 and 6.2. Converb₁ is the form conventionally known as the gerund in Ethiopic studies.

8. I have adopted this term from from Hetzron(1970:58) and Hudson(1976:269). It is an abbreviation of conjunctive form, and not to be confused with the co-verbs of Li & Thompson(1973), for example.

TABLE IV.

Converb ₁	'taking . .' etc.
massaa(mma)	massinaa(mma)
massitaa	massitakka2a
massaa(kka)	
massita2a	
massakka2a	
Converb ₂	
Sim.Perf.	'taking . .' etc.
massummaa(re)	massinummaa(re)
massitaa(re)	massitakko2aa(re)
massukkaa(re)	
massito2aa(re)	
massakko2aa(re)	
Imperf.	'taking . .' etc.
massoommaa(re)	massinoommaa(re)
massitoo2aa(re)	massitakkamaa(re)
massoohaa(re)	
massitamaa(re)	
massakkamaa(re)	
Pres.Perf.	'taking . .' etc.
massaammohaa(re)	massinaammohaa(re)
massitaattohaa(re)	massitakko2ohaa(re)
massaakkohaa(re)	
massito2ohaa(re)	
massakko2ohaa(re)	

Converb₁ forms are distinctively marked by a final open vowel. What is interesting to note is that, bracketed segments apart, the paradigm has only one cycle of tense/aspect-person marking; compare comments in 2.3.1.1. A close historical relationship between this and the Present Perfect can be postulated, with the latter possibly derived as a back formation from the converb.

Converb₂ forms are also distinctive. First there is the optional final -re, whose analysis as a switch reference particle will later be justified in 6.2. Then, there is the occurrence of three full paradigms, obviously derived from the basic Imperfect, Simple Perfect and Present Perfect, the last simply "tacking on" the formative -haa(re) to Present Perfect forms. As in the case of -(h)ane forms in 2.3.1.3, the h is apparently intrusive, motivated by the requirement to avoid vowel sequences. The final long aa before the switch reference marker -re distinctively marks this converb.

2.3.2.2. The Subjunctives.

As with the converbs, there are two subjunctive paradigms, designated SJ₁ and SJ₂, whose syntax is covered in Chapter 5.2. Subjunctive₂ is clearly the paradigm on which the Jussive is based. See 2.3.1.2.

TABLE V.

Subjunctive ₁	'I might take' etc.
masseena	massineena
massiteena	massitakkeena
masseena	
massiteena	
massakkeena	
Subjunctive ₂	'I might take' etc.
massona	massinona
massitona	massitakkona
massona	
massitona	
massakkona	

Distinctive features are (i) the -na ending, and (ii) the penultimate vowel, a short, unstressed o in Subjunctive₂ and long (stressed) ee in Subjunctive₁.

2.3.2.3. Subordinate Verbal Forms.

In Hadiyya, adverbial clauses are formally similar to relative clauses, and it is the forms used in these two constructions which are dealt with here.

Remember from 2.1.5, in the discussion on the Noun Phrase, that dependent modifiers are dependency-marked by loss of their final vowel. This holds for the subordinate verb also: the distinctive final o of the syntactically independent forms is omitted.

TABLE VI.

Imperfect	'(will) take' etc.
massoomm	massinoomm
massitoo	massitakkam
massoo(kk)	
massitam	
massakkam	
Simple Perfect	'took' etc.
massumm	massinummm
massit ⁱ	massitakko2 ⁱ
massu(kk)	
massito2 ⁱ	
massakko2 ⁱ	
Present Perfect	'have taken' etc.
massaammo	massinaammo
massitaatto	massitakko2ookko
massaakko	
massito2ookko	
massakko2ookko	

The reduction of 2nd person singular forms is also typical of subordinacy of these forms, as is the optional reduction of the now final kk from 3rd masc. sing. This kk tends to occur in

written materials, and in the spoken language occurs in more careful or deliberate styles. The final segment, m, in 1st person Imperfect and Simple Perfect forms is lexically geminate, and appears to be phonetically lengthened before pause, but in connected speech may be reduced to ungeminate status.

Finally, note the Present Perfect forms, which do not truncate (compare these with Converb₂ forms in 2.3.2.1).

2.3.2.4. Other Non-final Forms.

I group here a few remaining paradigms, included largely for the sake of completeness.

2.3.2.4.1. The 'while' Form.

As I will argue in 6.3, this form is a medial rather than subordinate form, and encodes a relationship of simultaneity with a following verb.

(2.49)

massummuyy	massinumuyy	'while I take..' etc.
massittuyy	massitakku2uyy	
massukkuyy		
massitu2uyy		
massakku2uyy		

On the morphological level, what is of prime interest in this paradigm is the appearance of an u vowel, making it unique among Hadiyya verb forms. The vowel co-occurs with word-final consonantal -yy ~ -yya, which is also unique to this environment. *u is often described in the Cushitic literature as a subjunctive (Zaborski 1975). Whether u here is a reflex of that, or historically connected with the o reflex of the subjunctive noted in 2.3.2.2 remains to be (dis)confirmed. I have no suggestions on the origin of the yy.

2.3.2.4.2. The 'until' Form.

This is another intriguing paradigm, perhaps derived from a negative subjunctive.

(2.50)

masseembe2e	massineembe2e	'until I take' etc.
massiteebe2e	massitakkeebe2e	
masseebe2e		
massiteebe2e		
massakkeebe2e		

It most likely derives from truncated Subjunctive₂ forms, to which be2e, the verb of negative presence/absence is cliticised. The "etymological" gloss is then something like 'absence of taking' = 'until taking.'

2.3.2.4.3. The 'without' Forms.

This would seem to be a negative of subjunctive₁, thus: massoo2n, 'without (I) taking' etc. Parallel with this is a little evidenced form with massee2n. The relevant person-number concord sets are as follows.

(2.51)

mass- 'take'		
sing.	1	massoo2n massee2n
	2	massitoo2n massitee2n
	3m	massoo2n massee2n
	3f	massitoo2n massitee2n
	3r	massakkoo2n massakkee2n
plur.	1	massinoo2n massinee2n
	2	massitakkoo2n massitakkee2n

The evidence relevant to deriving -2n consists of (i) that two paradigms, ending in -oo-2n and -ee-2n are found, (ii) the negative jussive in -oo-nn-e offers a parallel to the paradigm

in oo-2n, and (iii) there is a conditional -ta2n (perhaps -ta-2n) which carries a negative implication. I suggest the without/before forms are morphological negatives derived from the two subjunctive stems, SJ₁ and SJ₂. For a comment on the negative jussive, see 2.3.4.

2.3.3. -aan- Forms.

There is a set of several paradigms which are to be construed as Case-marked derivations of the -(h)ane forms dealt with in 2.3.1.3 above. The evidence motivating this analysis is as follows:

1. Attention has already been drawn to the fact that -(h)ane is suffixed to pronouns in predicative function, and to verbal forms in a periphrastic, perhaps nominalised Continuous. (2.3.1.3).

(2.52)

iihane	'It's mine' etc
daraboohane	'he's throwing' /darab-/ 'throw'

2. In genitival NPs, the vowel of this substantiviser is lengthened when the genitive is a substantive NP, and this is true also when the periphrastic continuous stands as head in a genitive NP.

(2.53)

iihaan mine	'It's the house of-mine'
game2ukkaan mine	'house of-he-who-stole'

3. When such substantive forms are Case-marked for oblique Case, the open vowel of the substantiviser is lengthened before the Case-suffix, resulting in the formative here designated -aan- before Case-suffixes.

(2.54)

iihaaniins	'It's from mine' etc
daraboohaaniins	'from-he-who-throws' (ABL)

With this as background, consider the forms exemplified in Table VII. Only a selection of the paradigms is given, others being regularly reconstructible.

TABLE VII.

Imperfect-Dative

massoommaanina	massinoommaanina
massitoohaanina	massitakkamaanina
massoohaanina	
massitamaanina	
massakkamaanina	

Simple Perfect-Locative

massummaanonne	massinummaanonne
massittaanonne	massitakko2aanonne
massukkaanonne	
massito2aanonne	
massakko2aanonne	

Present Perfect-Ablative

massaammohaaniins	massinaammohaaniins
massitaattohaaniins	massitakko2ohaaniins
massaakkohaaniins	
massito2ohaaniins	
massakko2ohaaniins	

Simple Perfect-Comitative

massummaanonne	massinummaanonne
etc	

Since these forms are Case-marked for oblique Case -- ie. treated as nominal heads -- a question as to their verbal nature must be addressed. Are they nominal forms, or Case-marked verbals? It is uncontroversial in syntactic theory of virtually every model, to assume that tense (or aspect) is the definitive

characteristic of verbal forms: if there is tense, the form is verbal. The converse seems not to be held, namely, that a form cannot be both (i) Case-marked like a nominal form, and (ii) still carry a tense(aspect) value. It is concluded here that the forms presently under discussion are verbal, and Case-marked -- that is, sufficiently nominalised to carry Case markings, but not deverbalised to the extent that they no longer encode aspectual as well as person-number distinctions. This clearly muddies the distinction between the two major categories involved, and speaks against a simplistic allocation of +V and +N features. The conflation of categorial properties that this demonstrates is not of course unique to Hadiyya; a quite different example can be seen in the person-inflecting prepositions of Gaelic, for example.

The second exemplar in (2.53) and (2.54) is a relative verb, and the further question arises whether the forms in Table VII are likewise simply Case-marked relative verbs. The issue is not yet fully resolved, but there seems to be semantic evidence that, parallel to the forms derived from relative verbs we have a homophonous set of nominalised subordinate verbs, which function in the sentence as adverbial clauses. See 5.1.4.

While recognising the innovatory nature in HEC of the forms in Table VII, the way in which they are derived morphologically is uncomplicated, following regularly the pattern of person, number and aspect distinctions that the basic paradigms reveal.

Hadiyya also has a form akin to infinitive, invariant for tense/aspect, person or number categories, formed by suffixing -imma to the root.

(2.55)

massimma	'take'
marimma	'go'
waarimma	'come'

This is not to be confused with a number of deverbal forms,

which are typically derivational in character, either occurring unpredictably with a root, or occurring with a phonologically conditioned sub-set of verb roots. This includes forms such as massato 'taking' and hecca 'life', which I hope to discuss elsewhere.

2.3.4. The Negative Verb.

Predicate negation is not a unitary morphological phenomenon in Hadiyya, nor for that matter in other Cushitic languages; see Appleyard(1984), Abebe et al(1985) for example.

To form the negative verb, Hadiyya suffixes -yyo in main clauses, cliticises bee2e in dependent or subordinate clauses, and uses different formations to form the negative imperative and jussive, negative of infinitive, and negative subjunctives. I compare some of these in (2.56) following.

(2.56)

main clause	subordinate clause	imperative	jussive	without/ before

-yyo	bee2i	-o-tte	-oo-nne	-2n

The morphological derivation of the form with suffixed -2n remains somewhat elusive. Semantically it has a quality of negativity, but its form bears little resemblance to the other negative markers employed in Hadiyya, except to note an apparent phonological relationship to the negative Jussive. Compare also the forms in 2.3.3 above. A rather simplistic analysis involving infixed 2, or, slightly more plausibly, a final glottal metathesised into the root, leaves unanswered the question of what the glottal is doing there in the first place. Negativity can nowhere else in Hadiyya be connected with a glottal.

The evidence relevant to deriving -2n is noted in 2.3.2.4.3

above. I suggested there that these are morphological negatives derived from the two subjunctive stems.

2.3.5. Derived Stem Verbs.

Hadiyya verb forms also include three derived stem verbs, incorporating a formative for passive, causative, or benefactive, or various combinations of these. These are illustrated in the following data, for mass- 'take', a root terminating in a geminate consonant, to which the derivative formatives suffix simply, avoiding phonological adjustments, but note that the causative in particular, is not to be understood naively - its morphology is complex: see Sim(1985) for example.

(2.57)

massaakko	/mass-aakko/	Simple stem
	'he has taken'	
massamaakko	/mass-am-aakko/	Passive stem
	'he has been taken'	
massisiisaakko	/mass-isiis-aakko/	Causative stem
	'he has caused s-one to take'	
massakk'aakko	/mass-akk'-aakko/	Benefactive stem ⁹
	'he has taken for his benefit'	

The interesting question here, of course (or one of the interesting questions), is to trace the complements of these various forms, and see how the lexicon can handle their relationship, on the model of 1.2.4.

Recall the lexical Passive Rule from 1.2.4. In Hadiyya, such a

9. The form shown here occurs with verb stems ending in a consonant cluster or geminate. The benefactive formative is otherwise a feature of glottalisation; either metathesising glottal stop into the stem, or assimilating with a root-final plosive to produce an ejective stop, see Sim(1985).

rule operates within the morphology of the language, deriving a stem such as mass-am- 'be taken' from the corresponding active simple-stem mass- 'take'. Reworking the Passive Rule in processual terms, the following would achieve this for Hadiyya. The inheritance hierarchy contains a type passive, to which is attached the information that the passive stem affixes -am- to the active stem, and specifies that the subject fills $ROLE_2$, roughly:

(2.58)

passive $\left[\begin{array}{l} \text{PHON: [4] -am-} \\ \text{SYN|LOC|SUBCAT: \{ NP[NOM] [1] \}} \\ \text{SEM|CONT: } \left[\begin{array}{l} \text{ROLE}_1: x \\ \text{ROLE}_2: [1] \end{array} \right] \end{array} \right]$

(2.58) is part of the input to the Passive Rule, which unifies with a specific lexical item, such as that shown in (2.59).

(2.59)

base & trans $\left[\begin{array}{l} \text{PHON: [3] mass-} \\ \text{SEM|CONT|RESTR: take} \end{array} \right]$

The sign base & trans^[] itself subsumes the expected cross-indexing of two subcategorised NP complements with $ROLE$ values. The output of the unification will be

(2.60)

$\left[\begin{array}{l} \text{PHON: [3] + [4]} \\ \text{SYN|LOC|SUBCAT: \{ NP[NOM] [1] \}} \\ \text{SEM|CONT: } \left[\begin{array}{l} \text{RESTR: take} \\ \text{ROLE}_1: x \\ \text{ROLE}_2: [1] \end{array} \right] \end{array} \right]$

Note how the rule must insert a variable for $ROLE_1$, which in Hadiyya can never be an optional oblique constituent. This rule can be quite simply re-formulated in declarative terms:

(2.61)

[PHON: [3] + [4]	
SYN|LOC|SUBCAT: { NP[NOM] [1] }	
SEM|CONT: [ROLE ₁ : x	
[ROLE ₂ : [1]]	
DTRS: [	PHON: [3]
	SYN|LOC|SUBCAT: { NP _[1] , NP[NOM] [2] }
	SEM|CONT: [ROLE ₁ : [2]
	[ROLE ₂ : [1]]
	PHON: [4] -am-

ie. there is a sign, derived from a transitive verb sign, passive [], which has one NP complement, whose ROLE₁ is an individual variable, x, and whose ROLE₂ is Nominative.

The syntax and semantic attributes of the first daughter, in (2.61) is the structure subsumed by a base & trans [] sign. This specifies that the NP constituent whose semantic attribute fills ROLE₂ has its subcategorised Case specification changed by the passive rule from unspecified (Absolute default) in a base & trans [] sign to Nominative.

A lexical Causative Rule can be formulated in a parallel way. Briefly, consider first the derivation of a causative-transitive stem from an intransitive simple stem, such as that shown in (2.62). base & intrans [] subsumes the structure in which the semantic attribute of a single subcategorised NP[NOM] [1] complement fills ROLE₁: [1].

(2.62)

<u>base & intrans</u>	[PHON: [3] (root)
	SEM|CONT|RESTR: ...]

A type causative in the lexical hierarchy will carry the input information in (2.63), and derive the output shown under unification with a sign like that in (2.62).

(2.63)

causative

$$\left[\begin{array}{l} \text{PHON: [4] -s-} \\ \text{SYN|LOC|SUBCAT: } \{ \text{NP}_{[1]}, \text{NP[NOM]}_{[2]} \} \\ \text{SEM|CONT: } \left[\begin{array}{l} \text{ROLE}_1: [2] \\ \text{ROLE}_2: [1] \end{array} \right] \end{array} \right]$$

|---->

$$\left[\begin{array}{l} \text{PHON: [3] + [4]} \\ \text{SYN|LOC|SUBCAT: } \{ \text{NP}_{[1]}, \text{NP[NOM]}_{[2]} \} \\ \text{SEM|CONT: } \left[\begin{array}{l} \text{RESTR: ...} \\ \text{ROLE}_1: [2] \\ \text{ROLE}_2: [1] \end{array} \right] \end{array} \right]$$

The semantic role structure is not preserved in this rule, since the relation-changing causative typically introduces a new agent, and demotes the simple stem agent to unspecified Absolutive Case, and ROLE_2 .

In the case of a transitive simple stem verb, there is some further complexity, and this Rule must be roughly formulated as follows.

(2.64)

$$\left[\begin{array}{l} \text{PHON: [4]} \\ \text{SYN|LOC|SUBCAT: } \left[\begin{array}{l} \text{NP}_{[1]}, \\ \text{NP[NOM]}_{[2]} \end{array} \right] \\ \text{SEM|CONT: } \left[\begin{array}{l} \text{RESTR: ...} \\ \text{ROLE}_1: [2] \\ \text{ROLE}_2: [1] \end{array} \right] \end{array} \right]$$

+

causative

$$\left[\begin{array}{l} \text{PHON: [5] -siis-} \\ \text{SYN|LOC|SUBCAT: } \left\langle \begin{array}{l} \text{NP[COM]}_{[2]}, \\ \text{NP}_{[1]}, \\ \text{NP[NOM]}_{[3]} \end{array} \right\rangle \\ \text{SEM|CONT: } \left[\begin{array}{l} \text{ROLE}_1: [3] \\ \text{ROLE}_2: [1] \\ \text{ROLE}_3: [2] \end{array} \right] \end{array} \right] \quad |---->$$

$$\left[\begin{array}{l} \text{PHON: [4] + [5]} \\ \text{SYN|LOC|SUBCAT: } \left\langle \begin{array}{l} \text{NP[COM] [2]} \\ \text{NP[1]}, \\ \text{NP[NOM] [3]} \end{array} \right\rangle \\ \text{SEM|CONT: } \left[\begin{array}{l} \text{RESTR: ...} \\ \text{ROLE}_1: [3] \\ \text{ROLE}_2: [1] \\ \text{ROLE}_3: [2] \end{array} \right] \end{array} \right]$$

Clearly a great deal more could be said, but this is sufficient to sketch in the way that the lexicon can cope with such regularities. Whether the transitive causativiser -siis- (in its major allomorph) itself ought to be derived from the intransitive -s- is a moot point. Nor have I attempted here to show how morphophonemic rules would operate to insert epenthetic i just when required. In addition, those cases where two stems are related morphologically, but without a systematic semantic relationship, will require to be handled via separate lexical entries.

Finally, in considering the third kind of verb derivative, note that a benefactive stem will preserve the same role structure, but the semantics of the output must record the subject-benefaction. This may be understood as a reflexive or an action for the subject's benefit in some way.

(2.65)

$$\begin{array}{l} \text{base} \left[\begin{array}{l} \text{PHON: [2]} \\ \text{SYN|LOC: } \left[\begin{array}{l} \text{MAJ: N} \\ \text{SUBCAT: \{NP[1]\}} \end{array} \right] \\ \text{SEM|CONT: } \left[\begin{array}{l} \text{RESTR: } \\ \text{ROLE}_1: [1] \end{array} \right] \end{array} \right] \\ + \\ \left[\begin{array}{l} \text{PHON: [2]} \\ \text{SYN|LOC|SUBCAT: \{... NP[1]\}} \\ \text{SEM|CONT|ROLE}_n: [] \end{array} \right] \quad | \text{---->} \\ \text{benef} \end{array}$$

$$\left[\begin{array}{l} \text{PHON: [2] + [3]} \\ \text{SYN|SUBCAT: \{ ... NP[1]\}} \\ \text{SEM|CONT:} \left[\begin{array}{l} \text{ROLE}_1: [1] \\ \text{ROLE}_n: [1] \end{array} \right] \end{array} \right]$$

In (2.65) a base sign unifies with a benefactive sign producing the output at lower right. I have not formulated either the causative or the benefactive rule declaratively, since both are approximations only, included for the purposes of outlining the model.

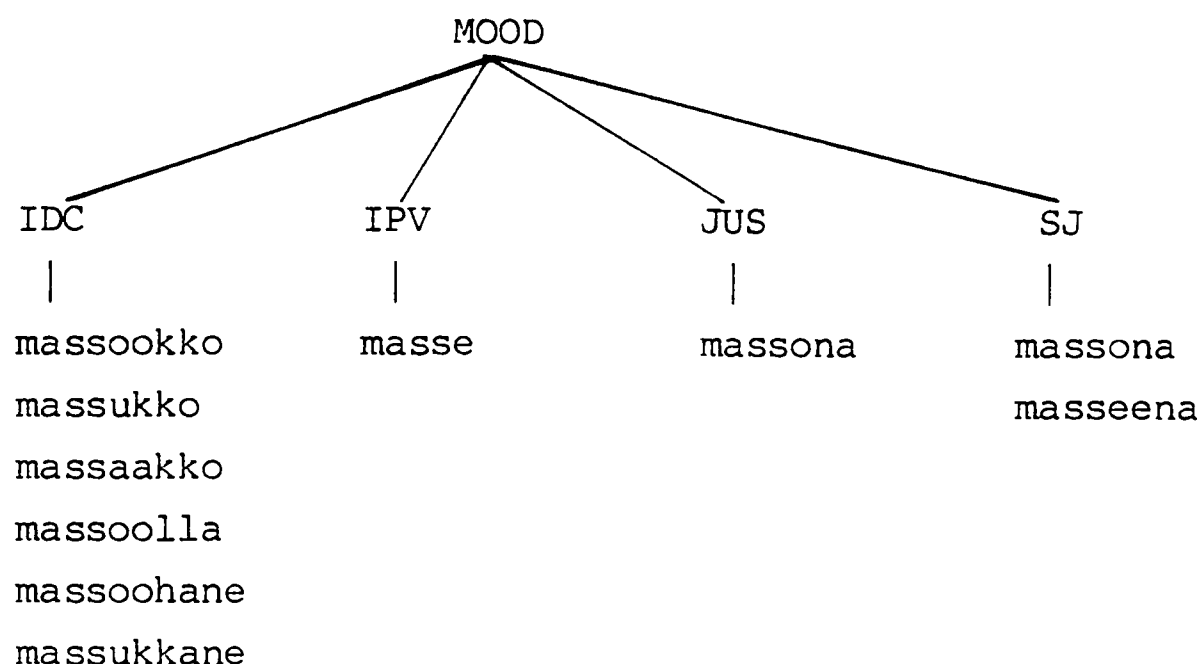
2.3.6. HEAD features.

The various Hadiyya verb forms reveal an interplay between the notions of tense (strictly = time reference), aspect (strictly = internal structure of event), and mood (as indicative, imperative, jussive, subjunctive). All labels used in the above sections are therefore somewhat intuitive, and mnemonic. They are supported however, by a traceable degree of correspondence with Amharic verbal forms, and to a lesser extent English, and by the way the forms are used in cohesive discourse. It seems to me that contemporary Hadiyya is shifting from an aspectual system to a tense system. In this study I cannot attempt to treat in any formal detail this area of Hadiyya grammar, however.

In attempting to set out a feature system, it is worth asserting that language-specific feature systems are notoriously parochial, and Hadiyya will be no exception.

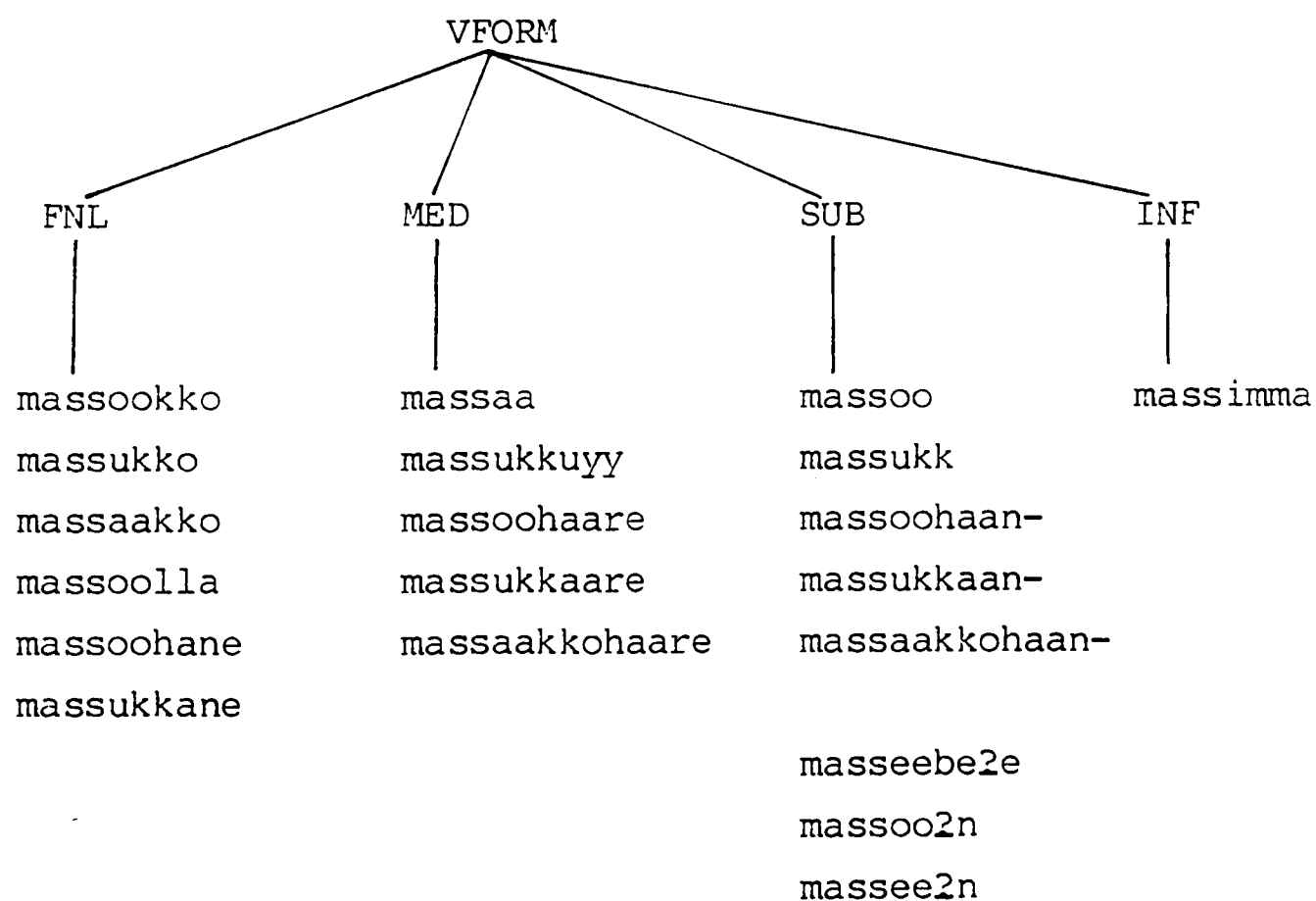
First, I propose an attribute of SYN|HEAD, named MOOD, which can select values IPV (imperative), JUS (jussive), SJ (subjunctive) and IDC (indicative).

(2.66)



Then, following the tri-partite division into S-final, S-medial and subordinate forms hinted at in the above sections 2.3.1 and 2.3.2, the features [FNL] (final), [MED]ial and [SUB]ordinate are adopted, as well as [INF]initive, as possible values for the attribute VFORM.

(2.67)



FNL and MED have reference to their position in the sentence, with the final verb alone being syntactically capable of

effecting full grammatical status. The status of MED forms is the subject matter of Chapter 6, where I will argue that these are sentential heads, not subordinate, but neither independent, as are [FNL] forms. In other words, neither [FNL] nor [MED] is a redundant feature, pending the arguments there.

I propose also, another attribute of SYN|HEAD, call it T-A, as a cover term for whatever temporal or aspectual notions are incorporated in the various paradigms, and its values include [PERF]ect, IMPF (imperfect), [PRES]ent.

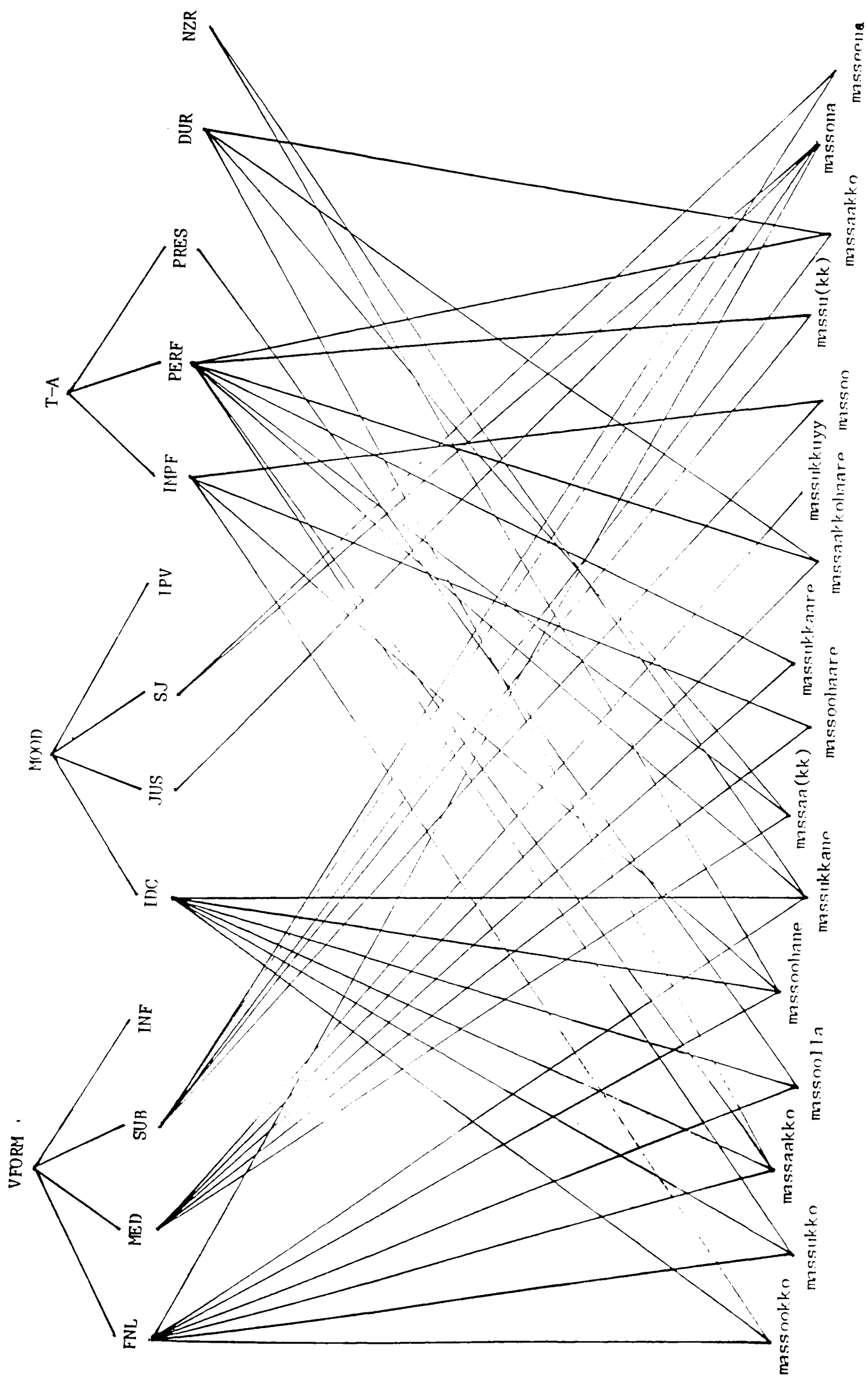
(2.68)

SYN|HEAD:	[	MAJ: V]
		VFORM: { FNL, MED, SUB, INF }	
		MOOD: { IPV, JUS, SJ, IDC }	
		T-A: { PERF, IMPF, PRES }	
		DUR	

I will also use the attribute [DUR]ative to identify the continuous forms, both present and past, and to distinguish the present perfect from simple perfect. (2.68) then summarises the HEAD feature set for Hadiyya.

Additionally, forms derived by means of the substantiviser -(h)ane will require the attribute NZR (nominaliser), and will be marked too for the attribute CASE.

According to the schema outlined in Chapter 1 for the inheritance of basic features in the lexicon, the following partial inheritance schema in (2.69) might be proposed for Hadiyya. 3ms forms are used for purposes of this illustration, being the definitive lexical entry.



I will assume that all predicate question forms of the verb will additionally carry the feature [QU], and negative forms will be marked as POLARITY: \emptyset . Some further FCRs can be represented in the inheritance hierarchy of the lexicon. Thus

(2.70)

FCR(6) [SIM] => [MED]

FCR(7) [IMPERF] & [CONT] & [CASE] => [SUB]

The past-continuous and past-perfect forms themselves result from unification of two signs, a [PRT] (participle) or [MED, PERF] converb respectively, and an [AUX] sign.

2.4. SUMMARY.

In this chapter I have set up tentative, partial feature structures for the noun and verb forms of Hadiyya, discussed dependency and headedness, raising the issue of non-unique heads, and proposing features to specify heads and dependents. I have also outlined rough proposals for the derivation of words and the derivation of the verbal stems of the passive, causative, and benefactive in the lexicon.

CHAPTER 3.

THE SIMPLE SENTENCE.

Outline.

3.1. THE VERBAL CLAUSE

3.1.1 Basic Sentence Types

3.1.1.1 The Indicative Sentence

3.1.1.2 The Imperative Mood

3.1.1.3 The Interrogative

3.1.2 Formalisation

3.1.2.1 Binary vs n-ary constituency

3.1.2.2 Configurationality and grammatical functions

3.1.2.3 Complements, adjuncts and optionality

3.1.2.4 Linear precedence

3.1.2.5 Subject-verb agreement

3.2. THE NOMINAL CLAUSE

3.2.1 The Nominal Clause

3.2.2.1 The nominal clause and copula

3.2.2.2 Formalisation

3.2.2 Suppletion

3.2.2.1 Tense-Aspect Suppletion

3.2.2.2 The expression of Being and Possession

3.3. SUMMARY

This chapter covers the single-clause verbal and nominal sentence. Simple subcategorisation (ie, for NP complements), null complements (pro-drop), linear order, and subject-verb agreement properties will be discussed, as well as issues of configurationality. These will be formalised in an HPSG framework oriented towards the further problems raised in Part II of the thesis.

Various recent Cushitic studies, notably those of Sasse (1984b),

Saeed(1984), and Hayward(1984) have made claims that Cushitic languages can best be understood as being organised on a Topic-Comment structure, with focused and unfocused constituents. There is certainly evidence that for a number of Lowland East Cushitic languages, a focus structure in the clause is very fundamental, but I find little in Hadiyya to make me put such a principle of organisation in the centre of Hadiyya syntax. The data and the following discussions in 3.1 will be seen to support this conviction.

3.1. THE VERBAL CLAUSE.

In this section I deal with the verbal clause, and in 3.2 with the non-verbal, or so-called nominal sentence. 3.1.1 deals very briefly with the traditionally recognised basic verbal-sentence types indicative, imperative, and interrogative. To pursue this into a full discussion of modality would, regrettably, take us into too much digression, and the expression of such concepts as necessity, obligation, intention, possibility, and permissibility must await another opportunity. In 3.1.2, I offer detailed discussion of configurationality, subcategorisation, constituent order, the 'pro-drop' phenomenon, and agreement properties.

3.1.1. Basic Sentence Types.

In following subsections I introduce the basic descriptive data for the traditionally recognised indicative, imperative and interrogative sentences in turn.

3.1.1.1. The Indicative Sentence.

Recall that Hadiyya was introduced as a V-final language, with otherwise free constituent order, in which NP complements indicate their relationship to a verb by case-marking. The declarative verbal sentence is marked by a verb carrying the feature [FNL, IDC,], see 3.5 ; that is, a verb form taken from the paradigms of the perfect or imperfect (see 2.3.1.1), or past

perfect or continuous (see 2.3.2.2). This is illustrated in the following data.

(3.1)

- a. mat manc higukk agananne iina hara2mukko
 one man past month-on to-me he helped
 'A man helped me last month.'

- b. higukk agananne iina hara2mukk manc
 past month-on to-me helped man

beeballa lehukko
 yesterday he-died

'The man who helped me last month died yesterday.'

- c. Geet'e2e ŶaaŶoogo mattamo
 Gete Shashago she-will-go
 'Gete will go to Shashago.'

- d. itt'o sooro asse2imm hasisoohane
 him Sooro to-send is-necessary
 'It is necessary to send him to Sooro.'

Sentence-final verb forms end in an o vowel, except that continuous forms ending in -hane are an innovation, lying outside the historical Cushitic verbal system, and are formed by cliticising the substantiviser, or copula-like element -(h)ane to a verbal stem. There is no other marker of indicative mood. Detailed discussion of the syntax of indicative sentences in detail is delayed until 3.1.2.

3.1.1.2. The Imperative Mood.

The final verb here is either imperative or jussive.

(3.2)

- a. eebe 'bring (it)!' (sg)
 kee waare 'come here!' (sg)

- b. soodo daba2lehe
 tomorrow come-back(pl)
 'Come back tomorrow!'

- c. masseebee2e keyye dissona
 until-he-takes- here let-him-
 away put
 'Until he takes it away, let him put it here.'

The addressee can be marked in a vocative form in sentence-initial position.

(3.3)

- taa meenticce, k'ure2e disse
 you woman pot put-down
 'Woman, put the pot down'

Notice the feminine form of the modified demonstrative taa, and compare kaa for a male referent; the demonstrative has been modified by phonemic vowel lengthening. Also note the final -e on the noun -- only nouns with female referents are so-marked in the vocative, with those for male referents being in the Absolutive Case: kaa beeto! 'You, boy.'

Rarely, a subject pronoun is included to strengthen the illocutionary force; a personal name will generally mitigate the force.

(3.4)

- a. at ka k'ure2e eebe
 you this pot bring
 'You bring this pot'

- b. miister ron, afuullehe
 Mr Ron sit-down(pl)
 'Sit down, Mr Ron.'

Notice in this last the plural form of the verb used for politeness. Naturally, intonation, voice quality, speed and abruptness are all used to alter the force of the imperative.

[MOOD: IPV] specifies imperative sentences, and [MOOD: JUS] the jussive. Syntactically, a true vocative is at best an optional complement, or perhaps an adjunct to the sentence, and can occur in any sentence type, whether the vocative and grammatical subject are co-referential or not. Since an explicit 2nd person subject can occur with imperatives, and since a jussive will also on occasion require an explicit subject NP, the syntax must permit these. We need then, to distinguish between "true" vocatives not in Nominative Case, and explicit subjects in an Imperative sentence. This can be accounted for in just the same way as is required for the declarative sentence, and will be discussed in 3.1.2.

3.1.1.3. The Interrogative Sentence.

Here I introduce very briefly the variety of forms assumed by both polar and content questions.

Polar questions suffix the marker -nnihe to the final verb of the sentence, which may take the form not only of V[FNL] but also of the converb₁, subjunctive₂, or complement of a non-verbal clause. The morphology of these question forms is remarked on in Sim(1985) (in which subjunctive₁ is referred to as an imperfect participle). The following data illustrate the forms, for which I assume a feature [QU].

(3.5)

- a. Geet'e2e is aayyana haracca uwwito2onnihe?
 Gete her sister pot she-gave-QU
 'Did Gete give her sister the pot?'
- b. at beeballa katama mattittonnihe?
 you yesterday town you-went-QU
 'Did you go to town yesterday?'
- c. Dubaanco mattoollannihe?
 Dubaanco you-are-going-QU
 'Are you going to Dubaanco?'
- d. ka mat'aafa anabbabakko2olayyonnihe?
 this book you-read-RH-NEG-QU
 /anabbab-akk-o2o-la-yyo-nnihe/
 'Haven't you read this book?'
 (expecting affirmative reply)

RH(etic device) notates the formative -la- which functions to indicate the questioner's expectation of an affirmative reply.

In -nnihe the laryngeal can be very lenis, and it is perhaps this that lies behind Hudson's (1976) report of a question marker -ni; although note both the use of a form -(n)nii in disjunctive questions, 4.2.2.2, and a form -he in retort questions, as (3.6):

(3.6)

- oo at amaddittok maruwwa? ---- at amaddittokahe?
 that you-hold what you hold-QU
 'What is it you are holding?'--'And that you are holding?'

As mentioned already, note the use of converbial forms in questions; compare the following data.

(3.7)

Erc'aafe mat'aafa massito2onnihe?

PF-3fs-QU

Erc'aafe mat'aafa massita2attennihe?

CV₁-3fs-COP-QU

'Did Ercafe take away the book?

The two are synonymous, and the morphosyntax is apparently the only difference. The first is based on the simple perfect, and the second on the converb. The copula -tte can be inserted into these forms derived from the simple perfect, and, interestingly the copula can be replaced by -h(i) ~ -h(o).¹ See in this connection, 4.1.4 also.

1. Two things are interesting here. (i) The status of the element h(V). Put simply, what is it? There is a segment h very peripheral to Hadiyya phonology, that has the appearance of an intrusive phonetic element; it is never associated with a 'meaning', it occurs in phonologically conditioned environments (ie, generally between vowels at a major morpheme boundary), and apparently functions simply as a juncture alternative to the glottal stop, between vowels. Note in (3.11c) below, maha ~ ma2a 'what'. Note also that h is followed here by o, after a Verbal-stem with final o, and otherwise by i. (ii) Secondly it is interesting to speculate whether this h has origins in the proto-language gender system, as a masculine marker, just as the copula in t has links with feminine marking. In this connection, recall that h[+GEM] ---> kk, and 3rd person masculine singular VForms have a -kk- unique to Hadiyya and Libido, hitherto without any satisfactory explanation of its origins. Recall, however, that a relic of the proto-Hadiyya gender system is found in the occasional marking of nominal stems with -kk- (formerly masculine gender) or -tt- (formerly feminine gender). In a number of cases, a segment h can be plausibly tied in with the masculine form.

(3.8)

an masseenannihe / masseenattennihe?

I SJ₁-QU / SJ₁-COP-QU

'Shall I take it (or not)?'

mat'aafa massiteenannihe?

book SJ₁-QU

'Will you take the book (or not)?'

As illustrated in (3.8), questions formed on the subjunctive have a dubitative reading.²

Note that intonation alone can be used to pose a question, with syntax otherwise that of the declarative sentence. The intonation contour in examples such as (3.9) has a high and rising pitch. Notice the loss of the final o vowel in biteesukkoyy. The initiating utterance in an exchange of greetings is a question, formed with a bare converb, and without a question marker; see (3.10).

(3.9)

higukk saantanne laapp'is mat saayya iina biteesukkoyy?

past week-on Laapiso one cow to-me he-sold-NEG

,, ,, ,, ,, ,, ,, biteesukkoyy

he2ukkonnihe?

'Didn't Laapiso sell me a cow last week?'

2. Note that the Jussive employs subjunctive₂ forms, which incorporate a different subject reference, and switch reference mechanism: see Chapter 6.2. In simple jussive sentences this interestingly parallels the earlier debate in linguistics about so-called "higher" verbs, thus the paraphrase 'I command he does X' The subjunctive question above has the single-subject requirement of subjunctive₁.

(3.10)

t'umm^a gattakka2a

peace you-spend-night

[CV₁]

'Did you spend the night in peace?' (morning greeting)

Verbal content questions are illustrated by the following.

(3.11)

a. hink manco do2litootto?

which man you-prefer

'Which man do you prefer?'

b. hink balla waattootto?

which day you-come

'Which day will you come?'

c. maha/ma2 issitoolla?

note h ~ 2

what you-are-doing

'What are you doing?'

d. iina ayy (manc) bat'ookko?

to-me who (man) he-will-work

'Who/which man will work for me?'

e. Geet'e2e ayyena uwwito2o?

Gete to-who she-gave

'To whom did Gete give (it)?'

f. ayy saayya bicc'inne app'isukko?

who cow with-stick he-beat

'Who beat the cow with a stick?'

The QU phrase tends to, but does not necessarily, occur immediately preceding the verb, no matter which constituent is the focus of the question. This could be construed as a strategy by which given information precedes focal information. Harries-Delisle(1978:465) makes this explicit claim for focus

position in SOV languages following Dezsó(1968); recall also the claim by Sasse and others that Cushitic clause syntax is organised around Topic-Comment/ focus structures. What is clear is that there is no node, such as COMP or QU outside the sentence, with a corresponding gap within S; in that sense, no move-WH rule is warranted. See Saeed(1984) who comes to the same conclusion for Somali. And note that a question formed on a sentence initial (temporal) adjunct remains typically in initial position. Yet, the question is raised how we might achieve the linear precedence NP > NP[QU] > V, as a preference, and how do we allow for the order-freedom? I suggest there is a little evidence here that the QU constituent is in the same location as a straight NP -- sentence initial for a sentential temporal adjunct, and free among subcategorised categories. Is the preference for QU to immediately precede the verb then a matter of pragmatics or syntax? For now, I leave this question open.

(3.12)

hink ammane edanca jamalloommo?
 which time meeting we-will-begin
 'Which time will we begin the meeting?'

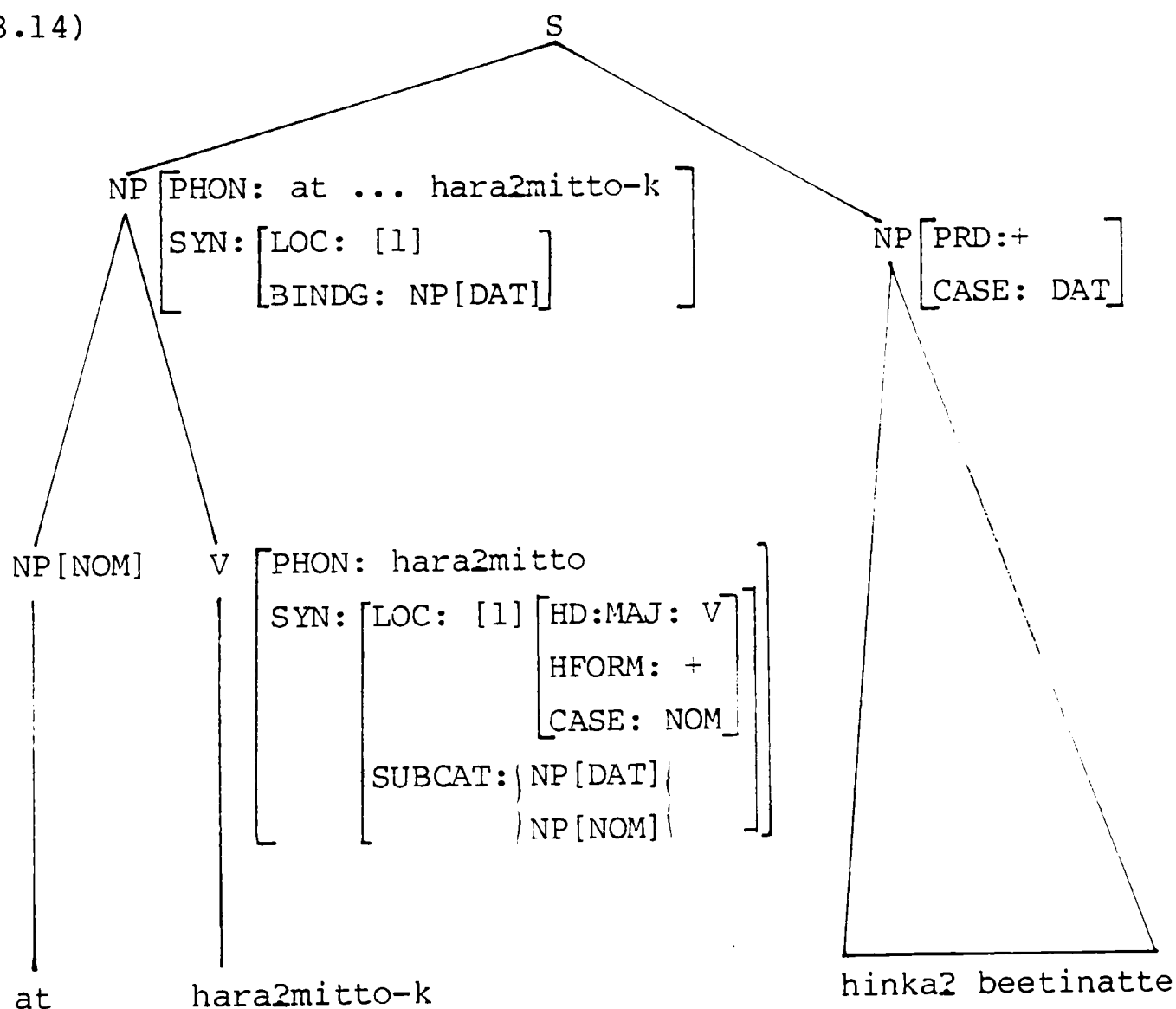
Any NP can be the focus of a question; the following examples illustrate questions formed on the nominative, dative and ablative constituents.

(3.13)

- a. kiina hara2mukkok hinka2 beeto?
 to-you he-helped-COMP which boy
 'Which boy is it that helped you?'
- b. at hara2mittok hinka2 beetinatte?
 you you-helped-COMP which boy-DAT-COP
 'Which boy is it that you helped?'
- c. kaka hinka2 beetiinsette bitaa2littok?
 this which boy-ABL-COP you-bought-COMP
 'From which boy is it that you bought this?'

It is clear from this data too, that a cleft sentence construction is frequently used to form a question. The subject is marked by suffixing -ka(Acc) /-kⁱ(Nom), and the complement will be optionally marked by the copula, following the constraints laid out in section 3.2. Since this formative is also the marker in relative clauses, we have here the oft-noted parallelism found between relative clauses, WH-questions and cleft sentences (see Harries-Delisle, *op.cit*). Note that (3.13c) right-extraposes the subject NP.

(3.14)



The rightmost NP in (3.13b) is in Dative Case, and carries the copula in Absolutive Case; it is head of the cleft construction, and the relative clause is subject complement, as in (3.14). Yet it is the verb of this relative clause whose subcategorisation requires a Dative NP. There must be a mechanism to pass the necessary subcategorisation information from the head of the relative clause on the left branch to the NP head of the right branch. See my conclusion in 3.2.1.2, and Appendix II.

3.1.2. Formalisation.

In the following five sub-sections I discuss the issues of constituent binarity (3.1.2.1), configurationality (3.1.2.2), optional constituency (3.1.2.3), constituent order (3.1.2.4), and subject-verb agreement (3.1.2.5). The first three of these in particular, are mutually inter-related, and together suggest constraints to be placed on any grammar model.

3.1.2.1 Binary vs n-ary constituency.

In this section I argue for recognition of the potential for n-ary unification in models like HPSG.

There is a strongly-held tradition in linguistics concerning the binarity of constituent analysis. This goes back to Bloomfield (1914:60f,110), and before him, to the German philosopher Wundt, according to Percival(1976). The more rigidly this is adhered to, the more contrived are some resulting analyses, although it must be acknowledged that many generativists have themselves insisted that naive adherence is to be deplored (See Postal 1964:35, Thomason 1974:722,note 5). The tradition is at least partly reinforced by two strands of thinking: a strong view of configurationality, such as Chomsky himself has consistently advocated, and the view of language structure as a function from one entity/category to a set of terms. Thus, in the familiar function-argument structure put forward in Extended Montague Grammar and Categorical Grammar, for clausal constituents, VP is a functor with (various) NP arguments, which for a coherent semantics are held to combine with their functor one by one.

At first blush, HPSG may appear to be somewhat ambivalent on this matter, at times seeming to follow the stance of Categorical Grammar and Extended Montague Grammar, and at other times seeming to conflict with this.

Thus, when the unification operation is elucidated through examples, it tends to be demonstrated as a binary operation.

This is purely for pedagogical reasons, and is an artefact of stepwise explanation, as we have already had occasion to note, in 1.2.2.2 and 1.2.2.3. Recall that in those sections I made the point that conceptually the unification of three signs was proceeding simultaneously via Rule 3 which requires three constituent sisters, although the algorithm used there appeared to enforce binarity.

As defined in Pollard(1984:47ff), however, unification operates on pairs, or subsets, of objects, to produce the least informative object in the domain which contains all the information contained in each of the members of the pair or set. Pollard goes on to formally define the Unification operation, and he does so in terms of sequences of categories $X_1 \dots X_n$ and $Y_1 \dots Y_n$, (op.cit p.51,63, and see also Kay, 1979; Sag et al,1984). This definition applies whether those are category sequences, that is attribute-value bundles, within two signs X and Y , or two sequences of signs. In the latter sense, in HPSG, we might more properly speak of a sequence of signs unifying with some sign, H .

Using the order of complements on the SUBCAT stack as the articulation of the obliqueness of grammatical functions is a rather elegant corollary of the formalism. But when Sag & Pollard(1987:5) speak of "... a universal underlying ordering ... of grammatical functions..." they may be held to imply that these are binary relationships. Strictly speaking this is not so. Nor is it how Sag and Pollard view the SUBCAT stack: it is a listing of categories in order of obliqueness, but the combination of constituents is mediated by rules, and it is there that binarity would require to be stated. Rule 1 (1.23), for example, by means of which the subject is unified in, is binary in nature, but Rules 2, (1.24), and 3, (1.25), are ternary.

The ordering of categories in the subcat stack does not impose the requirement that such categories are hierarchically organised with respect to each other, nor does it by itself necessarily constrain constituent structure to be a binary

matter. Subcat-ordering, hierarchy, and binarity, are not identity relations, nor are the two latter a necessary result of the first. HPSG as currently formulated, requires that SUBCAT be an ordered list, and also permits that unification need not proceed pairwise. The explicit separation of these notions in itself frees the model from binary and hierarchical unifications. HPSG then, explicitly permits the option of unification over a set of categories, with resulting "flat" structures.

With regard to the binary nature of functor-argument structures, as commonly promulgated in forms of Categorical Grammar, note that functions are not of necessity binary relationships (Oehrle et al, 1988:6ff) and recognition that a function $F(abc)$ is equivalent to a function $F_c(F_b(F_a))$ has been attributed to Schoenfinckel(1924) and Curry(1961). Note that extended Montague Grammar uses this result in the reverse direction, to justify the binarity of functor-argument structure advocated there, Dowty(1982a). See addendum to this chapter for a brief discussion on the position adopted by Gunji(1987) for Japanese, in an HPSG framework.

It is important therefore, to recognise the potential for n-ary unification in HPSG, which I will use to advantage in the grammar of Hadiyya, as will appear in 3.1.2.2 below, and in the following chapters.

3.1.2.2. Configurationality and grammatical functions.

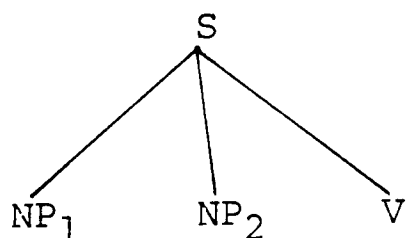
Generative grammar within the lines consistently advocated by Chomsky, has always insisted that grammatical functions such as subject and object be defined configurationally. A result of this is that constituent order at deep structure or D-structure is fixed, and in consequence, representation of different surface order of constituents is achieved by transformations, in which constituents are moved. This is obviously a theory-bound position, and other syntactic models have often sought to represent freedom of order directly: thus, GPSG (ID/LP format),

Relational Grammar, Functional Grammar, LFG, Role & Reference Grammar, to name a few. Koster(1978) has suggested that "move" be seen metaphorically, and his idea has been taken up by several scholars, including Rizzi(1982). According to this interpretation, "move" merely relates the position in which a constituent must be interpreted with the position in which it appears in S-structure. If this is taken seriously, then structural transformations are no longer motivated, so long as there is an adequate mechanism to relate the two positions. In such case, we have nothing other than a notational equivalent of a phrase structure grammar.

Advocates of a strictly configurational approach also maintain the hope that W^* languages do not exhibit processes that require reference to functions such as subject/object (Horrocks, 1987: 231). Chomsky(1981:128f), on Japanese, which most, apart from Gunji(op.cit) regard as a non-configurational or W^* language, sets up separate formal syntactic structures (3.15a), and associates these with grammatical relations (3.15b).

(3.15)

a.



b. $NP_1 = [NP, S]$

$NP_2 = [NP_1, VP]$

But it is not obvious to me how the association between (a) and (b) is to be effected. The analogous pairing is achieved quite felicitously in unificational format, as explained in 1.1.3, ie. by cross-indexing the categories in SUBCAT, with the various SEMANTIC|CONTENT|ROLE values.

Further, Chomsky's acceptance of the dichotomy of configurational vs non-configurational languages, and the corresponding dichotomy required in Universal Grammar weakens his position considerably, as others have noted. (Horrocks, op.cit:231-4, and Bresnan 1982).

As an aside, note that it has been pointed out by several scholars that D-structure exists, at basis, to define configurationally the predicate-argument structure of the sentence. Any attempt to weaken configurationality correspondingly weakens the need for D-structure. In being able to meet the requirements of both configurational and non-configurational languages by a single formalism, we have here a further argument against the need for separate D- and S- structures, and Move- α rules.

I incline towards a direct representation, and constituent order freedoms in Hadiyya are such that a model which does capture these directly will provide a simpler grammar.

Note that there are constraints on order freedom in Hadiyya; sentences are not simply "strings of words without higher level organisation" (Horrocks 1987:231) such as is claimed for so-called W^* languages.³ In Hadiyya, there is configuration; for example, constituents are quite rigorously head-final, even if headedness is split, and clefting and post-posing are two mechanisms noteworthy for their violation of this strong pattern.

3. Just how free a string of words can be in order is perhaps a matter of demonstration; Warlpiri is offered as revealing extreme freedom; of course it is neither a recently noted phenomenon, nor one restricted to so-called "exotic" languages, as the following quote from the Latin poet Horace shows:

"... Mē tabulā sacer
vōtivā pariēs indicat ūvida
suspendisse potenti
vestimenta maris deō."

Each noun phrase here is discontinuous, dispersed among the other NP constituents: tabula...votiva 'votive tablet', sacer...paries 'sacred wall', ūvida...vestimenta 'soaked garments' and potenti...maris deo 'powerful sea-god.' It is of course the concord between adjective and noun that permits correct interpretation.

However, subject and object are not definable in terms of their linear ordering with respect to each other, or to the verb whose complements they are. It is as common to find $S < O$ as to find $O < S$, although V remains the final constituent in the sentence. This is a not untypical finding in Cushitic studies. For Somali, Saeed(1984) avers a flat $S-O-V$ order in the base, eschews a VP constituent, and sees freer surface order derived by various transformations imposing discourse emphases; but that probably falls out from the model in which he works.

Indeed, Sasse (1984b) avers that most East Cushitic languages are discourse orientated, that is, organised on a Topic-Comment basis, claiming that phenomena such as topic, focus, information value, and definiteness "exert a much more drastic influence on the general organisation of the syntax of these languages than syntactic (ie. formal) relations." (op.cit p.245). I understand him here to be thinking of the order of constituents, emphatic positions in the clause or sentence, as well as the morphological marking of such matters as focus and topic. In other words, he seems to imply that in EC languages, grammatical relations are not configurationally defined. If I am presenting him fairly, then here is support for my own claim for Hadiyya. It is important to bear in mind that for Sasse, and I assume for Hayward(1984) too, pragmatic orientation is something to be dealt with in the syntax, following the approach of Firbas on functional sentence perspective, and Li & Thompson(1976) on topic-comment, and not something outside of syntax (or linguistics?), as is often affirmed in generative linguistics.

It is certainly true, as Sasse claims, that a number of East Cushitic languages exhibit morphological focus marking, (as well as topicalisation, clefting, and fronting); for example, the Omo Tana languages especially, including Somali, Boni, Rendille, Daasenech, and Arbore, as well as the Oromo and Konso groups. It is also true that these phenomena are more immediately salient to the field linguist than matters of configurationality, and I suggest that herein lies the nux of the strong claims made by such as Sasse and Hayward. The morphological marking of

focus and topic structures seems to be paired up here with constituent order and the identification of emphatic positions, and lead Sasse, and Hayward, to infer that the syntax of such languages may be differently organised from that of configurational languages. To suggest, however, that there may be languages which are organised on a pragmatics basis over against others organised in terms of configurationally defined grammatical relations would be to postulate a dichotomy in natural language comparable to the W^* vs configurational divide, an option I reject. It seems to me preferable to recognise this as a syntactic issue of constituent freedom, which interacts with syntactic matters of focus, clefting, topicalisation etc. to produce a variety of surface orders. Note also, however, that Karttunen & Kay(1985) suggest introducing a TOPIC attribute in Functional Unification Grammar to deal with a virtually parallel situation in Finnish, and so, in effect introduce a pragmatics parameter into the sign. I will not follow them in this. I am similarly dubious of Saeed's assumption of a fixed underlying order; the present monostratal framework of course disallows a "deep" level of structure.

It is interesting to note that Stucky(1983) finds topicalisation structures in Makua, a free constituent order Bantu language, to provide evidence for configurational over against "flat structures." I personally see no essential causal inference either way, and in Hadiyya will propose to capture free order directly, in an otherwise conventional syntax.

Hadiyya, however, although exhibiting the other features, does not show the morphological focus marking of the languages noted above, and constituent order in the unmarked clause or sentence is quite free. If either order of the constituents S and O is to be generated equally by the grammar, it follows that (i) there can be no VP constituent, and (ii) grammatical relations such as subject and object can no longer be defined configurationally. I assume there is a level of grammar at which it is possible and appropriate to formulate syntactic generalisations without reference to any discourse function.

The status of a VP constituent in languages subject to order freedoms such as those found in Hadiyya has been discussed in work such as Borsley(1983), (1984), Horrocks (1983), McCloskey(1983) and Stucky(1983) among others, and its implications are not new, and require little comment here. There is no evidence that I am aware of in Hadiyya simple sentences that requires a VP to be recognised, but see Chapters 5 and 6. As noted above, Saeed(1984:15,126) rejects VP constituency for Somali, citing as evidence there are no rules which move a VP; there is no VP deletion, nor any pro-forms; no rules make reference to a VP. Gunji(1987), on the other hand, makes a case for the recognition of a VP constituent in Japanese, an SOV language with free word order.

In Hadiyya, passivisation requires NP[ABS]>NP[NOM] and causativisation requires NP[NOM]>NP[COM], and this potentially raises problems if grammatical relations are not to be defined configurationally. In HPSG, however, they will be defined by AGR and CASE, which intuitively seems to reflect just what does happen in free order languages. Recall from 1.2.4 that the lexicon will include passivisation and causativisation rules, in which the different subcategorisations are spelled out, and systematically related to the various ROLE values; see 2.3.5, where these rules are roughly formulated for Hadiyya.

It was noted in 1.1.2, that HPSG signs reflect hierarchicality in the ordered SUBCAT list, and this defines a syntactic hierarchy of grammatical relations in terms of their obliqueness, and not, strictly speaking, a structural and configurational one. Note also how Rules 1 and 2 interact to mediate for English a configurational definition of the subject relation, by requiring that the subcat list of categories unifies in via Rule 2, except for the final complement on SUBCAT which is unified via Rule 1.

For languages with freer word order than English, in which it is arguable that the subject and object complements are sisters, freely ordered with respect to each other, as I argue for

Hadiyya, the question arises concerning how HPSG will handle these. There are several alternatives.

1. Retain the formalism as already described in this chapter and Chapter 1, and use a Wrap operation to order the subject (final) complement into the string. LP constraints won't achieve this, since they only operate on constituent sisters.
2. Collapse Rule 1 and 2 into a single rule that proceeds until its SUBCAT stack is empty. All NP complements will then be sisters, and LP constraints (or rather, the explicit formulation of LP laxity) impose various orders among the complements. This removes the configurationality of the final, subject, NP on SUBCAT, and yet retains a structure indirectly through the obliqueness hierarchy defined on the ordered SUBCAT stack. I will refer to this as the Single Rule Hypothesis.
3. Follow Borsley(1987) in specifying the subject by its own SUBJ attribute, so that SUBCAT now lists only the non-subject complements. Borsley now redefines Rule 1 to operate on a (verbal) sign with empty SUBCAT, so that the subject unifies in last of all. This is a modification proposed without reference to free constituent order or non-configurationality, and by itself achieves nothing for us here. But again, Rules 1 and 2 might be collapsed, so that SUBJ and SUBCAT cancel in a single n-ary operation. This will create subject and non-subject complements as sisters, and allow order to be constrained by LP conditions. To maintain an obliqueness hierarchy which includes the subject, requires some redefinition, yet the subject remains a "privileged" complement, definable under SUBJ for processes such as passivisation. This proposal obviously entails an alteration to Rules 1 and 2 very similar to that in the Single Rule Hypothesis. I will refer to this as the Separate SUBJ Hypothesis.
4. Un-order SUBCAT, so that complements can unify with their head-sign in various orders. The Rule required can then be conceived of in three ways. First, as for the two previous

hypotheses, it could be a single, n-ary unification, whose output is a "flat" constituent with a number of constituent sisters which are ordered by an LP constraint; but then un-ordering SUBCAT is otiose. Viewed from an alternative position, this option permits us the irreducible PS rule $X \rightarrow Y^*$, in which Y^* is a string of sisters which are categorially constrained by the SUBCAT list of a head-sister; here the rule, so-called is nothing more than a general principle explicating the saturation of SUBCAT in a unification operation, which is head- rather than rule- driven. This completely removes hierarchical ordering of grammatical relations, and yet clearly can reflect constituent order directly. Thirdly, the rule might be framed in terms of iterative binary unification with whichever is the first category in an un-ordered list, until the head is saturated. This imposes constituent configurationality through the binary-ness of the rule, and essentially is the approach proposed by Gunji(1987). I will refer to this as the Unordered SUBCAT Hypothesis.

Reintroducing a Wrap operation is somewhat dubious on at least two grounds; first, that it does bring a new operation into the grammar, and secondly, that wrapping a constituent into second place in linear order does not seem to achieve the freer order of languages like Hadiyya. Because of these objections, and in spite of the fact that it has been posited a number of times, (Bach 1981, Pollard 1984, and see Hoeksema & Janda, 1988 who strongly support the necessary contribution of Wrap in morphology), I will not pursue it here as an option. Nor, at this time, will I pursue an analysis in terms of a discontinuous VP constituent.

(2) and (3) seem entirely feasible, with no disadvantages that I can see. They both have the advantage that they retain the obliqueness hierarchy imposed by an ordered SUBCAT, which Pollard & Sag(1987:117f) convincingly demonstrate to be essential in one form or another. They would seem to apply to Hadiyya with equal felicity. I will comment further on them in Chapters 5 and 6 when discussing multi-clausal sentences.

But it is the final suggestion on which I will concentrate interest for the moment. This suggestion, of un-ordering SUBCAT, makes a strong hypothesis about the architecture of HPSG, and so bears further consideration. Formally, it could be conceived of in several ways: (i). Define SUBCAT to be a set of categories, $\{C_1 \dots C_n\}$, whose members, by definition, are unordered, and the subscripts are only of mnemonic value. (ii). Define SUBCAT to be an ordered list of sets, $\langle \{C_1 \dots C_n\}, \{C_j \dots C_k\}, \{C_m \dots C_n\} \rangle$. The sets themselves are then ordered with respect to each other, but members within each set would be freely ordered. $\langle \{C_1, C_2\}, \{C_3\} \rangle$ would have the effect of ensuring that a subject complement is fixed in relation to the two more oblique complements, and that they themselves are freely ordered with respect to each other. (iii). Define SUBCAT to be a set of ordered lists, $\{\langle C_1, C_2 \rangle, C_3\}$. This would allow a subject complement to precede or follow the other two complements, which themselves are ordered with respect to each other.

In spite of the latter two definitions appearing rather baroque, it is worth investigating the potential of the three a little more directly. In a sentence such as 'Gillies asked Lorna to sing', (i), (ii) and (iii) in (3.16) specify the SUBCAT stack of the verb 'ask' according to the three suggestions just given, together with the output strings they produce. The subscripts on NP refer to subject and object of 'ask', respectively. The standard ordered stack is the first exemplar. I am not concerned with grammaticality for the moment, only with the freedom each change in formalism brings about.

(3.16)

SUBCAT: $\langle \text{VP}[\text{INF}], \text{NPo}, \text{NPs} \rangle$
 Gillies asked Lorna to sing

(i) SUBCAT: $\{ \text{VP}[\text{INF}], \text{NPo}, \text{NPs} \}$
 totally free order

(ii) SUBCAT: < {VP[INF], NPo}, NPs >

Gillies asked Lorna to sing

Gillies asked to sing Lorna

(iii) SUBCAT: { <VP[INF], NPo>, NPs }

Gillies asked Lorna to sing

asked Gillies Lorna to sing

asked Lorna to sing Gillies

Alternative (i) establishes all complements as freely ordered sisters to their head. The other alternatives, clearly exert more subtle and specific constraints. Option (i) is the least baroque, and is the one I will pursue in application to Hadiyya. It does however, completely disallow any hierarchical ordering of grammatical relations. For Gunji(1987), this is of no concern; he still links it, via the single phrase structure rule $M \rightarrow C D$, to a configurational view of Japanese, but is happy to allow the object NP to be configurationally higher than the subject, and for subject and verb to form a constituent excluding the object, neither of which corollaries is readily acceptable.

In contrast, I will adopt as a major hypothesis, the version of un-ordered SUBCAT that operates with the irreducible rule $X \rightarrow Y^*$. From this point on, subcategorised categories will be enclosed in set braces, thus SUBCAT { ... }. Categories listed within these will still be listed in order of obliqueness, following the convention of Pollard & Sag (1987), purely for reasons of clarity. I will return to compare the Single Rule and Separate Subject hypotheses in Chapters 5 and 6.

Pollard & Sag(1987:117) note that their keyword-type semantic roles do not stand in any ordered relationship, but my own proposal in 1.2.1.2 of having subscripted ROLES would provide a simple way in which a semantic rather than syntactic hierarchy of obliqueness can be maintained. Grammatical relations will now be defined indirectly, by means of the argument structure imposed by the various indexed SEMANTIC|CONTENT|ROLE values.

Note also how this leaves a door open to the rather persuasive argument of Dowty(1982a: 85ff) that function-argument structure may be largely universal in natural language.

If SUBCAT is not an ordered stack, but the complements it contains are freely un-ordered, then free constituent order is an automatic outcome. LP constraints could then be framed in terms of ordering constraints imposed on complements within SUBCAT; eg. that the subject NP occur last, for instance. Grammatical relations like subject and object are partially captured in the Case features associated with subcategorised-for complements, and partially through the indexing of the SEMANTIC|ROLE values. It is the subscripted ROLE indices that capture semantic configurationality, too.

Of course this dispenses with isomorphism between the properties and composition of syntactic types and the properties and composition of semantic types, which Montague emphasised (Montague 1976, and Dowty 1982a,b). Sag(1986:10) also eschews such an isomorphism between the grammatical hierarchy defined by SUBCAT, and the semantic function-argument hierarchy. Some of the reasons for this (from Pollard & Sag, 1987) include the following:

1. Generalisations about constituent order in (configurational) languages such as English appear to be organised according to the obliqueness of grammatical relations.
2. Control is variously construed in different models in terms of syntactic configuration (c-command of GB), semantic predicate-argument structure (Categorial Grammar after Bach & Partee, 1980 and LFG), and obliqueness (o-command) of grammatical relations. This last is Pollard & Sag's suggestion for HPSG.
3. Generalisations about the binding of pronouns and

reflexives are asserted by Pollard & Sag to be most simply formulated in terms of o-command.

4. Relation-changing rules like passivisation are most naturally expressed by reference to an obliqueness hierarchy, and it is suggested that this is what underlies the well-known accessibility hierarchy of Keenan and Comrie(1972).

The first point links linearity, obliqueness and configuration; I contend that free order languages do not link these three, and suggest this is potentially a significant matter for UG. Notice also, that in non-configurational languages, c-command cannot provide a plausible control mechanism. In such cases, rather than establish obliqueness as a primitive as Pollard and Sag do, and mediate command via an o(bliqueness)-command, it can alternatively be hypothesised that obliqueness reflects a more basic predicate-argument structure. Note that this is not to deny that subcategorisation is a syntactic, categorial matter in favour of some sort of semantically based selection.

So, even if Sag's argumentation holds for English, it need not be employed as a universal. I propose instead that a semantic, predicate-argument hierarchy is the more basic, and that obliqueness is derived from this, and mediates structure in configurational languages. Moreover, there is a parallelism between the two hierarchies, through their cross-indexing. It is proposed here that configurational languages employ the grammatical hierarchy defined by SUBCAT, whereas non-configurational languages employ the indexing of the various semantic ROLE attributes to establish a (semantic) hierarchy. This simple device alone would hold together in parallel these two extreme positions. Admittedly, at the present time, this represents the more controversial position.

The verb roots mar- 'go' and waar- 'come' are relevant to any discussion defining a hierarchy under the ROLE or SUBCAT, as are

such verbs as hara2m- 'help', and beedd- 'finish'. In all of these there is a question to be asked regarding the grammatical function of the more oblique complement. For the first two, this is in Absolutive Case; for the latter it is in Dative and Comitative respectively. Pollard & Sag(1987: 126f) discuss examples in which Case is not predictable on the basis of predicate-argument structure, and they see this as decisive in opting for the grammatical hierarchy of obliqueness in SUBCAT as against any semantic hierarchy. Note that my proposal, although not a definition of a tightly parsimonious architecture in fact ties together the two listings in just the way required cross-linguistically.

Consider for example, the proposal to unordered SUBCAT applied to a simple example, that in (3.17), in which the question of Case assignment arises.

(3.17)

- a. an waaccamo maroommo
- b. waaccamo an maroommo

'I will go (to) Waachamo'

The lexical signs required are as follows.⁴

(3.18)

[PHON: an	
[SYN | HEAD:	MAJ: N
	PER: 1
	NUM: SG
	CASE: NOM
[SEM | CONTENT: I	

4. I avoid the whole issue of the proper semantics for the pronoun as a variable, and indeed, of nouns in general, for reasons of both scope and clarity.

(3.19)

[PHON: waaccamo]	
SYN | HEAD:	[MAJ: N]
	PER: 3
	NUM: SG
	CASE: ABS]
[SEM | CONTENT: Waachamo]	

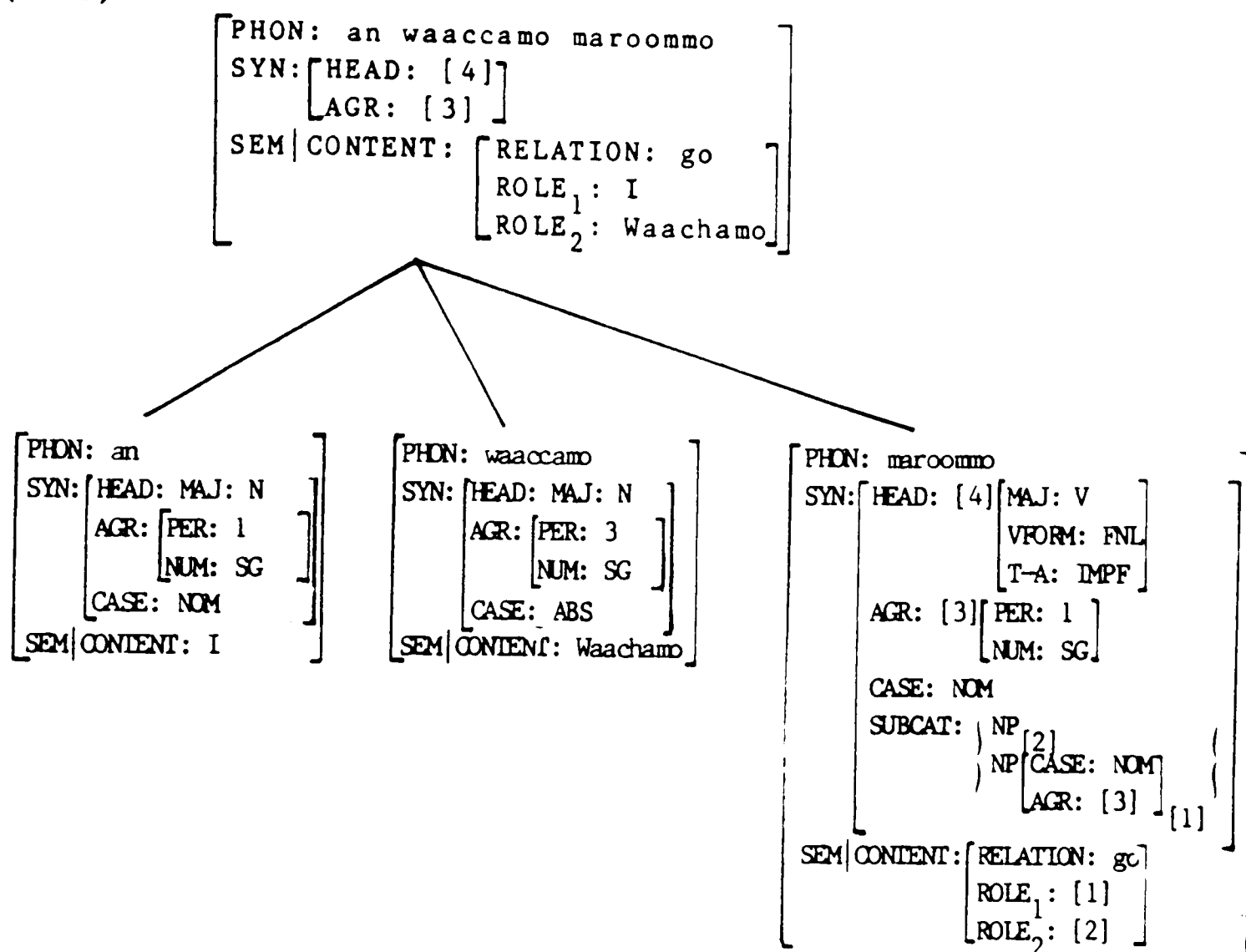
(3.20)

[PHON: maroommo]	
SYN:	[HEAD: [MAJ: V]
	VFORM: FNL]
	T-A: IMPF]
AGR: [3]	[PER: 1]
	NUM: SG]
	CASE: NOM]
SUBCAT:	[NP [2]
	NP [CASE: NOM]
	AGR: [3]] [1]
SEM | CONTENT:	[RELATION: go]
	ROLE ₁ : [1]
	ROLE ₂ : [2]]

In accord with my suggestion in 2.1.4.2, SUBCAT in the verbal sign includes a complement whose Case value is unspecified. By an FCR, this is filled in as [ABS], and, being tagged to ROLE₂, will be direct object. Specified in this way, the complement NP_[2] will not only appear in surface strings in Absolutive Case, it will be treated as direct object for the purposes of the passivisation rule, which must be reformulated to account for this default Case assignment. On the other hand, a complement which is assigned Absolutive Case in the lexical sign need not be tagged to ROLE₂, and although it will appear in surface strings as a direct object, it will not be treated so by the passivisation rule. The relevance of this will be seen in 3.1.2.3 below, see (3.31) and following comment.

To return to the example in hand, unification with the above signs yields the following:

(3.21)



The proposed revision places HPSG in an interesting position vis-a-vis other current models, which tend to opt for either a grammatical or a semantic argument hierarchy; HPSG architecture permits one or the other, and this seems to accord with observed differences among languages. The loss of economy seems a small thing when set against the cross-linguistic descriptive potential.

Note where this leaves the model: In more configurational languages, where a certain fixedness of constituent order holds, obliqueness can be maintained as a syntactic hierarchy, via the ordering of constituents in SUBCAT. A semantic hierarchy, related to ROLE_n subscripts can remain implicit or undefined. In freer order languages, the constituent freedom can be realised directly by relaxing the orderedness of constituents in

SUBCAT, and the burden of obliqueness relationships will be borne by the hierarchy of ROLE attributes.

It is important to address the question as to how this suggestion -- of un-ordering SUBCAT -- will work in the case of controlled complements, binding of anaphoric elements, application of lexical rules, and other seemingly hierarchical generalisations. Some of these issues will be dealt with in later chapters of the thesis, but for now, it seems, to me at least, there will be little difficulty. SUBCAT permits constituent-order freedom by being itself an un-ordered stack, so the controlled complement is not immediately followed on the stack by its controller as in 'standard' HPSG. In a way parallel to the handling of sub-categorised-for NPs within the simple sentence, control will be handled by the semantics attribute via the CONTENT:ROLE indices.

Consider here one further example illustrating the application of unordered SUBCAT to produce free-order strings.

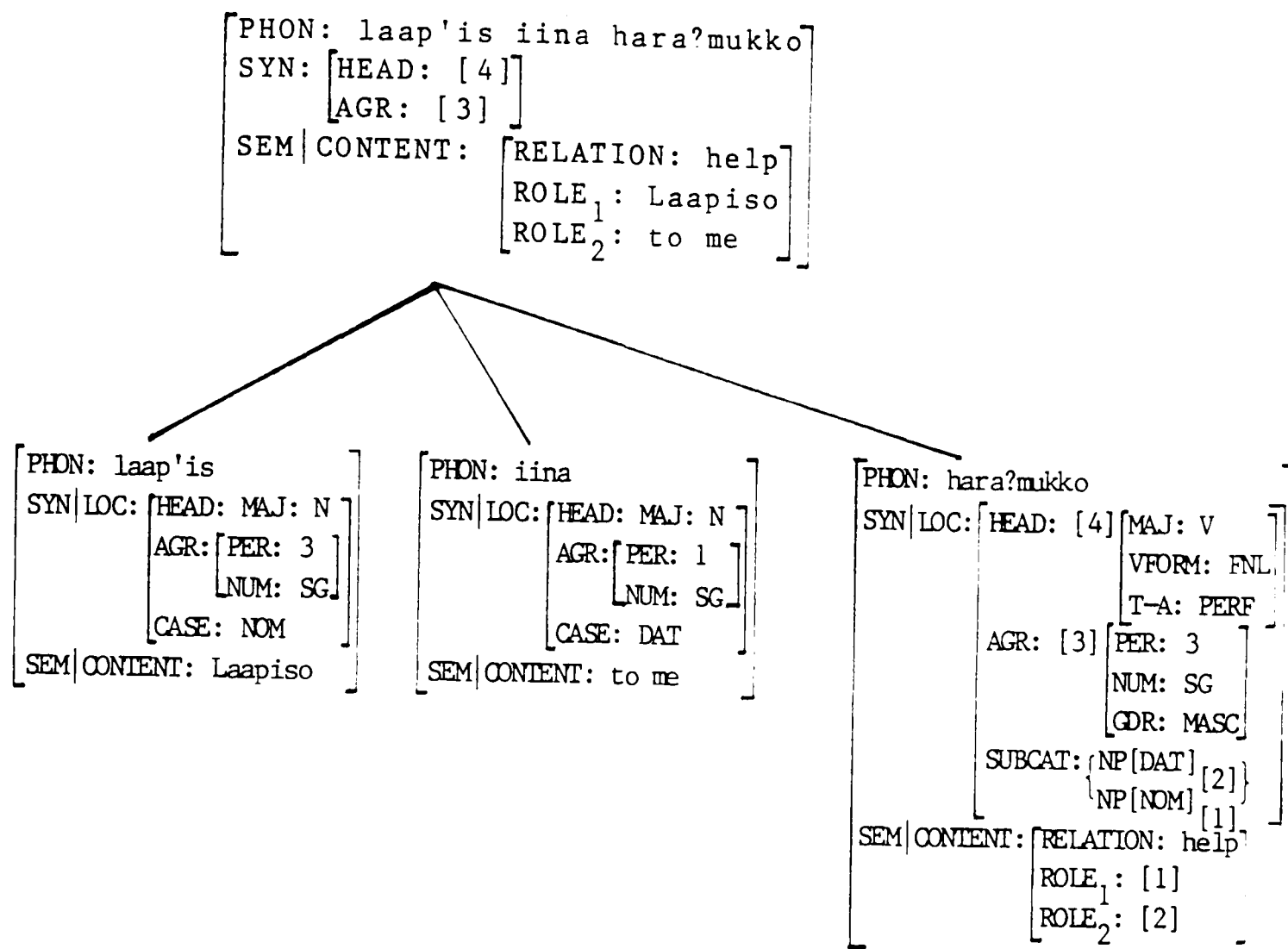
(3.22)

- a. laap'is iina hara2mukko
- b. iina laap'is hara2mukko

'Laapiso helped me[DAT]'

Unification will proceed as follows:

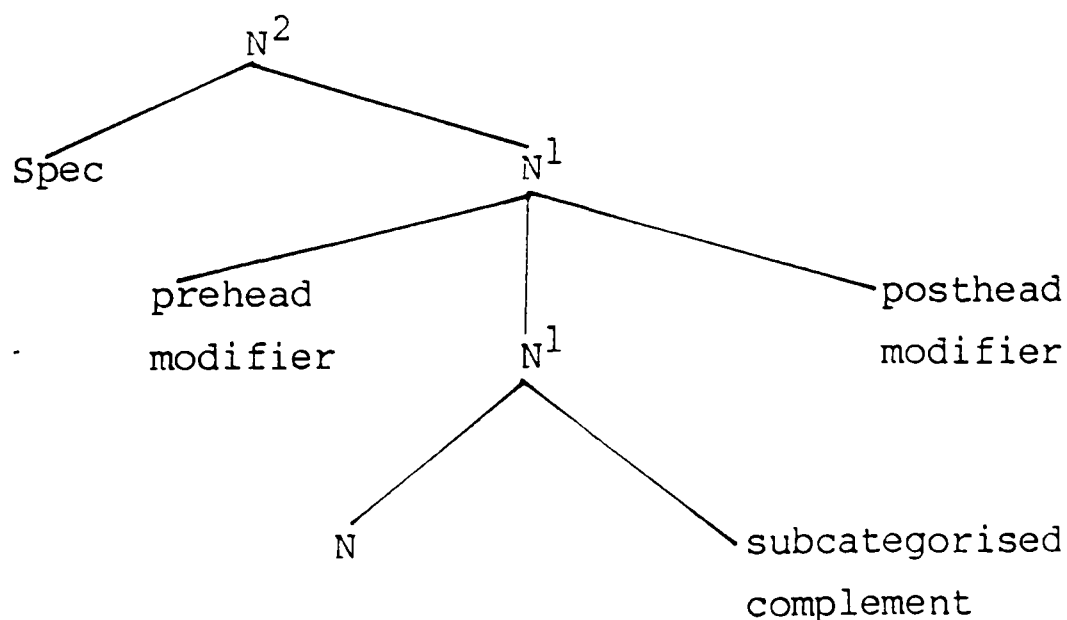
(3.23)



3.1.2.3. Complements, adjuncts and optionality.

Constituent structure -- and as a corollary, both nomenclature and subcategorisation -- have been matters of configuration in most generative studies. See for example, Chomsky(1970:210f), Jackendoff(1977), Selkirk(1977). Thus, as in (3.24) for example, in such expositions of NP, configurationality is used to distinguish among Complement, Adjunct, Modifier, and Specifier.

(3.24)



It will become clear below that in Hadiyya I will not attempt to establish such a schema among constituents, and I shall merely adopt, as a starting point, the notion of "Complement". It is frequently defined to refer to those constituents for which the Head is subcategorised, and which are obligatory in the expansion. Additionally, all modifiers for which a head does not subcategorise, I will refer to as "Adjuncts". This will be broadened in following discussion.

In Hadiyya, the Head is the only obligatory constituent in any string -- the verb, or predicate nominal, in a clause or sentence; a nominal head-word in an NP -- and no arguments are obligatory in either category. In such circumstances it is clear that subcategorisation cannot be decided by this criterion.

Again, as I will show in 3.1.2.4, there is free order among the various arguments of a nominal or verb, subject only to the restriction that the head-word is the final constituent daughter of the string. I take this to be symptomatic of non-configurationality in both the NP (see section 2.2) and S, and therefore conclude that neither constituent structure nor nomenclature can be differentially decided by any appeal to hierarchy.

The lack of configurationality as much as the optionality of all non-head constituents in Hadiyya obfuscates any attempt to decide whether any nominal argument of a verb is a complement or an adjunct. It is necessary therefore, to consider other criteria.

Sag(1986) follows previous studies, for him the distinction between complements and adjuncts being primarily a matter of obligatoriness vs optionality, but he goes on to note:

"... that optionality of a dependent element is a necessary, but not a sufficient, condition for it to be an adjunct rather than a complement. In all

likelihood we will need to analyze certain dependent elements as optional complements." (1986:32).

So, adjuncts are optional constituents, but the converse is not true: not all optional constituents are judged adjuncts.

Pollard & Sag(1987:135f) offer several rough diagnostic criteria to aid in distinguishing complements from adjuncts. These are:

1. The semantic contribution of adjuncts can be dependent on their relative order.
2. Any given adjunct tends to occur relatively freely with a range of lexical head items, whereas complements are often more restricted in the items with which they can co-occur.
3. Adjuncts are generally iterable, whereas complements are not.
4. In English, posthead modifiers tend to be ordered to follow complements.
5. At least some adjuncts apparently disallow unbound internal gaps.

The last two of these diagnostics are likely to be specific to English, but nos. 1, 2, and 3 would appear to have wider relevance, and I propose using them to identify complements in Hadiyya.

In Foley & van Valin(1984), and Foley & Olson(1985), the term subcategorisation is not used, but apparently that is roughly what is intended by their term "core argument." Core argument is defined semantically, to cover constituents whose presence is required by the lexical meaning of the verb: "the participant roles associated with each verb are indicated in the lexical entries of the verb." (1985:24), or alternatively, as "the arguments indicated by the semantics of the verb: one for 'run', two for 'open', and three for 'give'." (op.cit,p.35). There is an appeal here to a notion of what arguments are ontologically obligatory to the intension of the verb. See also Pollard & Sag(1987:132) who appeal to the notion of ontologically necess-

ary arguments when speaking of optional complements. This attempts to get beneath the problem of obligatoriness vs optionality.

Since we are not concerned with the simple surface question of identifying complements as obligatory constituents, the concept of Complement may seem correspondingly more vague, and there is more than an element of intuition that creeps in. How is it to be determined, for example, that a constituent is required by, or ontologically necessary to, the lexical meaning of the verb? This is apparently not an empirical matter, determined by reference to data, but now seems to be determined subjectively. That the judgement is intuitive -- appealing to some mental notion of what arguments are ontologically necessary to completely signify some action, event, process or state, whether as a supposed universal notion or as a language specific notion -- may be held to vitiate their attempt.

Nonetheless, the application of some such criterion is not new: to describe 'eat' in 'We never eat at 5 o'clock' as "pseudo-intransitive" (Lyons(1968:360ff) just as certainly makes appeal to an intuitive judgement that something, some object or foodstuff, is essentially involved. This intuitive identification of arguments is not motivated in the absence of data, but is reached by the consideration of data, and is not to be deprecated. The approach is useful, and I will use it to reach similar decisions for Hadiyya.

Yet there remains a caveat: there is an open-endedness about an upper bound. Are optional arguments, like the source and goal phrases associated with motion verbs, for example, judged to be complements or adjuncts?

(3.25)

He came from home yesterday

He is going to Greece next week.

This particular problem is made more acute in Hadiyya, where the

corresponding motion verbs appear in surface forms with a direct object -- or more strictly, a complement in Absolutive Case -- which is the place-goal of the motion. This would conflict with an "intuition" that such verbs have only one argument. Thus:

(3.26)

a. beeballa t'issooro meera marukko

[ABS]

'Yesterday Tissooro went (to) market'

b. soodo i beyyo waallehe

[ABS]

'Tomorrow come (to) me (lit. 'my place)'

c. leega2a sooriins waatto2o

[ABL]

'Leega2a came from Sooro'

I will follow Dowty(1982:87)'s methodology here in recognising mar- 'go' as a two place verb on the principle that the locative goal in Absolutive Case yield the IV phrase meera marukko, with which a subject can combine. It is less certain that a source-phrase is entailed by a motion verb, and the looser relationship is perhaps reflected in its instantiation in the oblique, Ablative Case.

The final decision, for these and for all verbs in Hadiyya, must be motivated by language specific, data-based criteria; intuition must be supported by whatever syntactic evidence can be adduced in its support. And, indeed, in a language where any modifier may be optional, the distinction between complement and adjunct may not itself be well-motivated.

The arguments or complements necessary to a verb may be most easily seen in those made explicit in the isolated simple sentence, but certainly, for Hadiyya, the identification of complements cannot simply be decided on this basis: grammaticality bears no reference to the number of arguments explicit.

For Hadiyya, I shall employ the first three criteria set out by Pollard and Sag, as well as the intuition of ontological necessity. And, as just noted, the distinction is often blurred, as will become obvious below.

I turn now to a consideration of the subcategorisation of some verbs in Hadiyya. I will simply assume meantime, that the grammatical subject counts among the subcategorised-for complements.

(3.27) lists some verbs which subcategorise for one complement, their grammatical subject in Nominative Case.

(3.27)

One Place Verbs (Intransitives and Statives)

af-	'arrive' (as transitive = 'reach X')
but'-	'be poor'
buuzal-	'be well-cooked'
baac-	'be afraid'
baar-	'be yellow' (= ripen, of grain)
band-	'be bald'
bobar-	'be startled'
lomma2n-	'be old'

The syntax attribute of the sign of such verbs will contain a single <NP> under SYNTAX|SUBCAT:<NP[NOM]>.

In illustration of some of these, note the following:

(3.28)

- a. hurbaata witt'akkam amman afaakko
'crop sowing time arrived.'
- b. mann hundim but'ooyyo
'All men are not poor.'
(= not all men are poor)

- c. ee beetik horoor bandaakko
'That boy's head became bald.'

Secondly, two-place verbs, in which the object NP is in Absolutive Case, include the following:

(3.29)

Two Place Verbs (basic Transitives)

1. with object NP in Absolutive case

mar-	'go'
waar-	'come'
ballac-	'circumcise'
ag-	'drink'
it-	'eat'
awwon-	'follow'

Again, these can be illustrated.

(3.30)

- a. an (beeballa) waacamo marummo
'I went to Waacamo yesterday.'
- b. keyye waare
'Come here!'
- c. (i minenne) sas ooso ballaccummo
'In my house, I circumcised three boys.'
- d. (hiimo2o) ado agaammo
'Last night I drank milk.'
- e. (sibaarimm bikkina) hurbaata itaammo
'Because of hunger I ate food.'
- f. (k'ot'allanonne) iyyanna awwonaammo
'In strength, I followed my father.'

Bracketed constituents I identify as adjuncts rather than complements.

The lexical entry for such verbs, will contain the structure:

(3.31)

$$\left[\begin{array}{l} \text{SYNTAX|SUBCAT: } \{ \text{NP}_{[2]}, \text{NP}_{[\text{NOM}] [1]} \} \\ \text{SEM|CONT: } \left[\begin{array}{l} \text{ROLE}_1: [1] \\ \text{ROLE}_2: [2] \end{array} \right] \end{array} \right]$$

Recall that Case is assigned in SUBCAT; since there is no structural change under transformation, there is no call to separate Case assignment from surface structure.

As already noted, I will continue to list complements in SUBCAT in order of decreasing obliqueness, as Pollard & Sag, but recall that there is now no hierarchy entailed by this. That is maintained by the ROLE subscripts. In this way, the Case values assigned under SUBCAT are tagged to a ROLE. ie. Case is lexically assigned to arguments of a verb, except ABS. Then, whether a constituent is Complement or Adjunct, ABS Case is assigned by a default principle.

In the following data, (3.32), are listed two-place verbs which have an NP complement in oblique Case.

(3.32)

Two Place Verbs (basic Transitives)
2. with the object complement
in an oblique case.

hara2m-	'help'	NP[DAT]
beedd-	'finish'	NP[COM]
gar-	'pass the night'	NP[LOC]
dumm-	'assemble'	NP[COM]

Once again, illustrative sentences are given below.

(3.33)

- a. (higukk saantanne), laapp'is t'issoor iina hara2mukko
[DAT]
'last week, Laapiso Tissooro helped me[DAT].'
- b. bat'aan sibaarinne beeddaakko
[COM]
'The workers are done (= in extremis) with hunger[COM].'
- c. googonne garaammo
[LOC]
'I passed the night on the road[LOC].'
- d. (ka-balla)k'abale2enne dummaammo
[COM]
'Today I assembled with the Qebele[COM].'

The lexical entry for these will include the value SYNTAX|SUBCAT: {NP[CASE],NP}; again, the inherent Case of these oblique complements is lexically assigned in the verb's own lexical sign.

Continuing now with some three-place verbs, I include the following roots.

(3.34)

Three Place Verbs. 1. with two objects in absolutive case.

guguur-	'lug off'
agis-	'make-to-drink'
aagis-	'make-to-enter'
ama2nis-	'make-to-believe'
iss-	'make/do'

The first verb is an underived root, but the next three are causative stems, formed from ag-, aag-, and ama2n- respectively. iss- is perhaps a causative from ih- 'become'. To find two

surface objects is rare, and not well-studied; there is often disagreement over acceptability, and processes such as passivisation only affect one of the objects: the "underlying" direct object. The following data illustrates the construction:

(3.35)

- a. abuullaanc hakk'uwwa mine guguurukko
'The farmer lugged the trees home.'
- b. ni amba2 lar hundam wo2o agisaammo
'I made all our hamlet's cows drink water.'
- c. mu2uta mine aagisaammo
'I brought the goods home.'
- d. an loh manco yesusa ama2nisummo
'I made six men believe Jesus.'
- e. wo2o t'iiga issukko
'He made the water blood.'
- f. wo2o dik'aasa issummo
'I made the water wine.'

(3.35a) is a clear example of double objects, however, although only the 'patient' object, hakk'uwwa can become subject of a passive counterpart. The next three sentences are perfectly acceptable and need no comment, but note that when the verb is iss-, Hadiyyas with some linguistic training disagree about the Case of the complements, most preferring both to be in Nominative case. This would be unusual, and it may be the problem is a question of elision of the final vowel of the nominal Absolutive before the verb initial i, although such elision does not usually mislead such people. There is no confusion when the verb is it- 'eat', for example. The object complement is also wanted in Nominative by the same people when the verb is ih-, which I have already noted is probably the non-causative form from which iss- is derived. This suggests

that we have here two nominal complements linked by a verb which is essentially copular. Thus

(3.36)

- a. wo2 dik'aas ihukko
 'water became wine.'
- b. t'aar meesaan ihukko
 'iron became an axe'

These are more plausibly copular clauses, for which, see section 3.2. However, they do contain a verbal element, clearly, and if we adopt the second analysis just given, the verb, ih- 'be(come)' must be subcategorised for two complements in Nominative Case. Thus

(3.37)

PHON:	ihukko
SYN|LOC|SUBCAT:	{ NP[NOM] [2], NP[NOM] [1] }
SEM|CONT:	[ROLE ₁ : [1]]
	[ROLE ₂ : [2]]

The data in (3.35) then need to be accounted for by an exceptional lexical causativisation rule in which the two Nominative complements are demoted, the subject to the unmarked, or default Absolutive, and the predicate complement to specify Absolutive.

In the following data are some three-place verbs, all of them simple, or underived, roots.

(3.38)

Three Place Verbs (basic Transitives)

2. both object complements carrying
different case marking.

dabar-	'give back'	NP NP[DAT]
baatt'am-	'quarrel'	NP[COM] NP[LOC]
batt'am-	'share'	NP NP[COM]
bik'-	'hinder'	NP[DAT] NP[LOC]
aall-	'lick'	NP NP[INST]
uwu-	'give'	NP NP[DAT]
atoorar-	'discuss'	NP[COM]

I exemplify these in (3.39):

(3.39)

- a. marabo itumm anga allabinne aallaammo
[ABS] [COM]

'I licked with the tongue[COM] the hand[ABS] (with
which) I ate honey'

- b. laro anniccina dabarummo
[ABS] [DAT]

'I returned the cow to the owner'

- c. Aber iininne hoff luw wannem baatt'amukko
[COM] [LOC]

'Aberra quarrelled with me about a small thing'

- d. an santima iyyabbaayyinnem batt'amummo
[ABS] [COM]

'I shared the cents with my brother'

- e. 'itt' iina wošanne bik'ukko
[DAT] [LOC]

'He hindered me in the matter'

- f. Yohaanis bira itt' abbaayyina uwwukko
 [ABS] [DAT]

'John gave a dollar to his brother'

- g. ni amba2 oosinne woša atoorarummo
 [COM]

'I discussed the matter with the children of our
 hamlet[COM].'

In these examples, there must be a value SYNTAX|SUBCAT:
 <NP[CASE], NP[CASE], NP> in the lexical entries.

Parallel to (3.39a) are the following.

(3.40)

- a. i anga saayyinne aallisaammo
 my hand cow[COM] I-caused-lick

- b. saayya i anga aallisaammo
 cow[ABS] my hand[ABS] I-caused-lick

'I got a cow to lick my hand'

To handle such data, I propose that SUBCAT contain disjunct lists, { NP[COM], NP, NP[NOM] } to cover (3.40a), and { NP[ABS], NP, NP[NOM] } to cover (3.40b). The unspecified Case will be filled out as ABS, and the role this complement is cross-indexed to, $ROLE_2$, will be direct object, and the passivisable complement.

Consider also the following pair, which illustrates a productive process in causative verb derivation.

(3.41)

- a. kollina wit'oo mann i uulla abuullookko
 to-side who-sow men my land plough-IMPF-3s
 'Men who sow for profit-sharing will plough my land'
- b. kollina wit'oo manninne i uulla abuullisoommo
 men[COM] plough-IMPF-1s
 'I will get men who sow for profit-sharing (to)plough
 my land'

The subcategorisation of (3.41b), the causative, is derived by lexical rule, see 2.3.5, which takes care of Case assignment also.

Note in all the above, that Case assignment is a straightforward outcome of the formalism. Also, and for a strongly pro-drop language like Hadiyya this is a substantive simplification of the syntax, the lexical head verb itself contains all the essential person, number and gender information to generate sentences without any explicit nominal complement. This is equally true of dependent-marking languages like Hadiyya, and head-marking languages like Lakhota (van Valin, 1985) or Bantu languages, in which NPs are not marked in any way as arguments of a verb, but their role is marked rather on the verb.

Finally, notice how the lexical entry of the verb, and specifically its SUBCAT stack, constrains the number of NP complements, so that sentences like those in (3.42) cannot be produced by the grammar, and need not be filtered out by any module.

(3.42)

- *The man arrive a woman.
- *Harriet helped Letitia Joanna.
- *Harriet I drinks coffee a cup of tea.

I will cover verbal complements in Chapter 5.2.

There is one further aspect of all this that I want to address now. Simple sentences such as "John gave a present to his sister" unsurprisingly elicit Hadiyya sentences having the same number of NP constituents.

(3.43)

Yohaanis	irifa	itt'	aayyana	uwwukko
John	present	his	sister	he-gave

But, as I have asserted already, the only obligatory constituent of this is the final verb, uwwukko, and all NPs occur optionally; exactly which NPs do occur in any utterance depends on the pragmatics of some real-world speech-act. Although grammaticality of such variety can be illustrated from elicited material, it is more effectively demonstrated from coherent discourse, and several typical texts are included in Appendix III. Excluding the copular-verbs y-, he2- and ih- from consideration (see below section 3.2), no NP complement is known to be obligatory for any verb.

This extreme "pro-drop" (or as I prefer to refer to it in a less theory-bound way, null-complement, behaviour), is seen in the Ethiopian language area generally. Perhaps the most celebrated example is that quoted by Ullendorff(1964:7), from the Amharic 'History of King Teodros' by Debtera Zaneb. Not a simple sentence in the mono-clausal sense, and certainly not communicatively!

(3.44)

gīza	nīda	bīye	bīst'īh	īmbi	alīh	bīlo
rule	lead	I-say	if-I-give-you	no	you-say	he-say
yīt'alañal			bīye.			
he-will-oppose-me			I-say			

Of the nine words, all except the one glossed 'no' are verbs. There are no NPs; no person reference is explicit. Yet the sentence is grammatical, if not exactly transparently clear! A

literal rendering, given by Ullendorff, is equally obscure: 'I saying: he will be against me, he saying: you say "no" when I give you, saying: rule, lead!' I quote it again in (3.45), with quotation marks added, and with the intended subject-referents, G(od) and T(eodros) added below each verb.

(3.45)

<"	'gīza	nīda'	bīye	bīst'īh	ĩmbi	alīh	'	bīlo	"
	rule	lead	I-say	if-I-give-you	"no"	you-say		he-say	
	T	T	G	G		T		G	

yīt'alañal	>	bīye.
he-will-oppose-me		I-say
G		T

The words are Teodros', as he thinks: "God will oppose me, saying, 'you refused when I gave you comand to rule.'"

With this digression, I refer to chapter 6.1, where null-complements in the Hadiyya clause chain will be considered, offering the above as one important reason why a model that does not proliferate the generation of empty categories is advocated in this thesis: for Hadiyya, most derivational trees assigning structure to forms occurring in spontaneous, everyday speech, would be mostly dead branches. HPSG is a model offering a solution without extraneous structure. Thus, Pollard(1985:26) says "gaps only occur in the positions of complements that are assigned roles." Now, as normally interpreted, this applies to all complements which are subcategorised-for. There is either a surface constituent or a gap. If there is a gap, there is a dependency which is filled elsewhere in the structure. What happens in the case of "pro-drop" in an inflecting language such as Hadiyya, where NP complements are largely optional, is that neither filler nor gap is required. That is, not every gap in one constituent-level is bound by a filler elsewhere. Following Gunji(1986)'s terms, it is important in Hadiyya to distinguish free gaps and bound gaps. Bound gaps have a filler elsewhere, and occur with topicalisation, relativisation, clefting, and

complement questions. So-called free gaps occur with pro-drop, and can be treated in various ways in the syntax.

The most obvious way perhaps, is to unify some unsaturated sign with a null sign, (3.46).

(3.46)

$$\begin{bmatrix} \text{PHON: } \emptyset \\ \text{SYN|LOC|HEAD: } [] \\ \text{SEM|CONT: } [x] \end{bmatrix}$$

The syntax of such a sign is completely unspecified, so it will unify with any subcategorised-for complement. When that happens, a zero phonological string unifies in, and, most importantly, a semantic variable, x , is unified into the appropriate cross-indexed ROLE of the head sign's semantic attribute, where x is a free variable. The effect of the null sign is to create a free gap in place of any NP complement, whose phonology is null, and whose semantic value is a free variable, to be assigned pragmatically.

Alternatively, however, ignoring this more conventional solution, I will suggest that pro-drop languages require a Free-Gap Principle. In this, the complement concerned is cancelled from SUBCAT, and a free semantic variable is unified into the head sign's cross-indexed semantic ROLE. The principle is tentatively formulated in (3.47):

(3.47) Free-Gap Principle

$$\begin{bmatrix} \text{SYN|LOC|SUBCAT: } \{ \dots \} \\ \text{SEM|CONT|ROLE}_n: x \\ \text{DTRS|HD-DTR|SYN|LOC|SUBCAT: } \{ C_{[n]} \dots \} \end{bmatrix}$$

The advantages of this are that (1) no null sign need be postulated in the lexicon, and (2) no gap with null phonology is in fact created, although the ROLE value is assigned a variable. I take the position that a null sign must be demonstrated to be a necessary construct by its advocates; I don't require one, and

have nothing to demonstrate, since surface structures are correctly generated by (3.47). I also prefer the view that a grammar without gaps in such unbound positions is simpler than one with gaps. I will therefore assume this approach in the following sections and chapters.

The Free Gap Principle can be stated in disjunction to the Gap Introduction Principle, such that when an optional complement is cancelled from the subcat stack, either a filler is unified in, or a semantic variable is unified into its ROLE value.

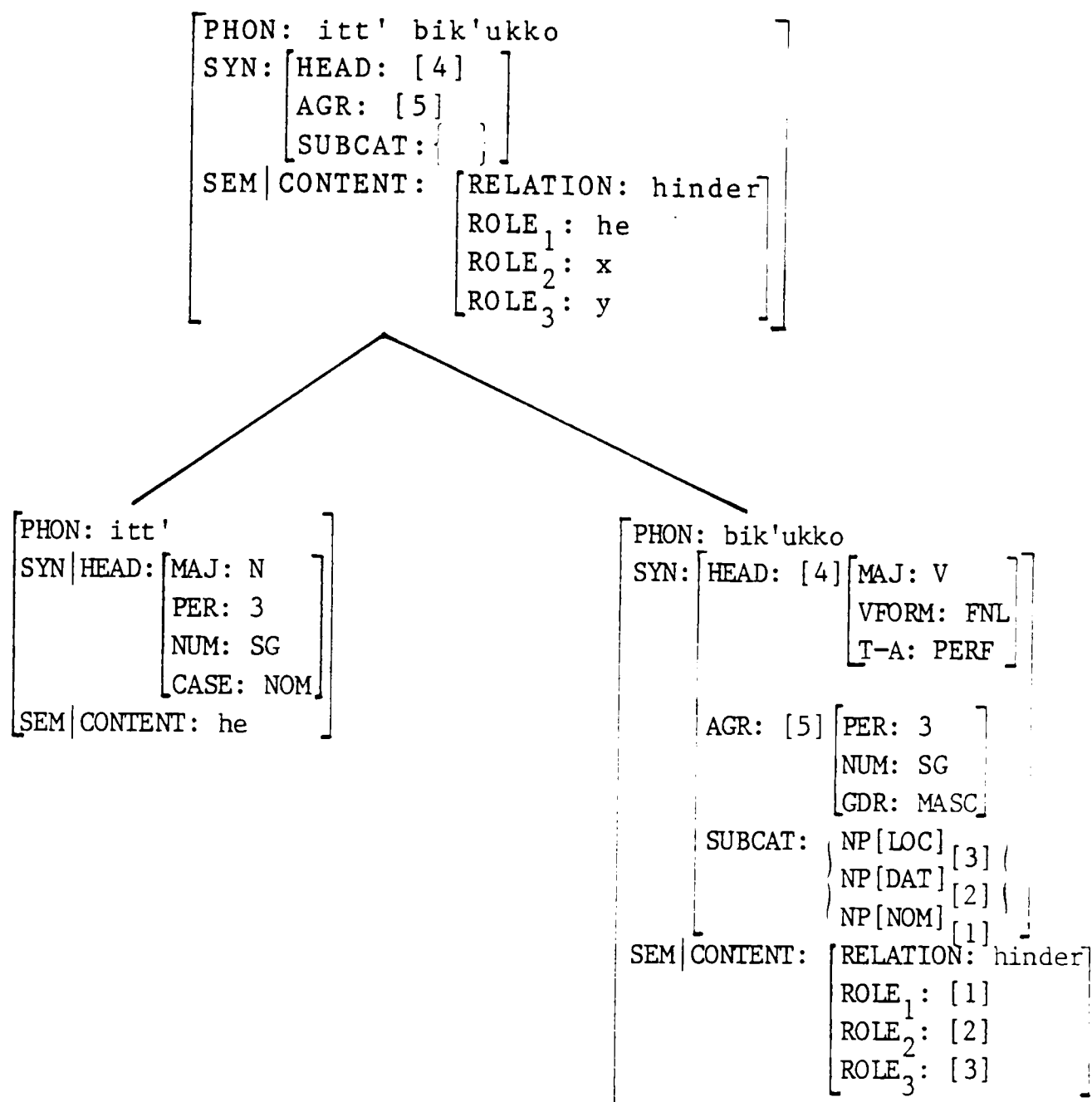
Consider how this operates in application to null-constituent variants of the full clause in (3.48).

(3.48)

- a. itt' iina wošanne bik'ukko
'He hindered me in the matter'
- b. itt' iina bik'ukko
- c. itt' wošanne bik'ukko
- d. itt' bik'ukko
- e. bik'ukko

I will only show the way in which (3.48d) is produced. To output (3.48d), unification will delete the oblique category constituents from SUBCAT, and write in open variables to the ROLE value of each, as follows:

(3.49)



So much for complements; adjuncts will be discussed in 5.1.5.

3.1.2.4. A mechanism for linear precedence.

Since the work of GKPS introduced separate precedence and dominance relations into current syntactic thinking, a variety of proposals have been made concerning a suitable mechanism for achieving order freedom. This includes a Wrap operation following Bach(1981) inter alia, and the approach of Falk(1983), working within LFG, which attempts to generalise precedence relations in terms of grammatical functions. A Concat operation within the PHONOLOGY attribute is proposed in Pollard & Sag, (1987), following Sag(1986); and Uszkoreit (1986) proposes grouping LP constraints into disjunctive sets, which purports to

capture alternative orders found within a configurational syntax.

Here, the approach of Pollard & Sag will be followed, with only one revision. In 1.1.5.(p.54), I showed briefly how Sag(1986) proposed dealing with precedence relations, and improve the treatment of these in English. His work, of course, limits the question of ordering to those constituents that are sisters to a node. He notes one alternative to operating LP principles via the grammatical hierarchy. In that alternative, "certain constituents would be ordered only with respect to those sisters that are already present in the structure under construction." (op.cit:45). However, he does not deal with the problem of free order of constituents that are generally held not to be complement sisters. The problem in Hadiyya is of free word order between S, O, O2, etc. from which it follows that either (i) VP is not a constituent, and subject is sister to V, O, O2; (ii) we must define the position of Subject as interpenetrating among daughters of VP; or (iii) following Gunji, allow the object to be at a higher node than the subject. I have already argued for the first stance in preceding sections of this chapter.

Another serious criticism that might be made against Sag's proposal, is that linear order is surely a syntactic matter, not a phonological one, and that any proposal to handle it by an operation CONCAT within the phonological attribute is misguided. Phonology is involved rather as an immediate corollary. I believe this is not hair-splitting. If the syntax, that is, a string of categories, is linearly organised by the phonology, that tends towards making syntax a "deeper", or different-level structure than phonology, which is then closer to the surface, and interpretive. CONCAT does just the same work as Move α , and would seem to be just as powerful.

If this is so, then, rather than have a Constituent Order Principle (Pollard & Sag, 1987) operate by concatenating the phonologies of the input's signs, it is preferable to set this up

as a syntactic stipulation. In order not to cause confusion with Sag's terminology, I will use the attribute ORDER within the syntactic attribute to achieve the same results. Informally, the constraint for head-final languages is easily formulated as $[] < \text{HEAD}[\text{LEX:}+]$, and more formally, as in (3.50). This will interact with the sister constituents obtained by adopting the Single Rule Hypothesis (with or without separate SUBJ), to capture directly the free ordering of these constituents. Alternatively, by not requiring that SUBCAT is an ordered stack, HPSG can be revised to reflect this order freedom as a simple, direct outcome of the theory's notation, without requiring the attribute ORDER.

Indeed, any unificational model, such as HPSG, affords us a mechanism for handling both configurational and non-configurational languages. Recall that a semantic function-argument hierarchy still obtains, through ROLE_n . cf Sag(1986:10).

When SUBCAT is unordered, the only constraint on precedence that is necessary is the one in (3.50).

(3.50)

$$\text{DTRS: } \begin{bmatrix} \text{HD-DTR [1]} \\ \text{COMP-DTRS [2]} \\ \text{ORDER: [2] < [1]} \end{bmatrix}$$

I have made the point repeatedly that Hadiyya is a V-final language with extensive freedom in the ordering of arguments. It is high time that this claim is supported by a consideration of data. Take the example sentence in (3.51) as a typical Hadiyya utterance.

(3.51)

mat manc higukk agananne iina hara2mukko

S

A

O₂

V

'A man(S) helped(V) me(O₂) last month(A).'

The constituent orders SOAV, SAOV, OASV, OSAV, ASOV, AOSV, are all equally grammatical. Notice that even the temporal adjunct(A) is freely ordered (when there is a temporal phrase functioning as discourse setting, it generally stands sentence-initially). In (3.52) the orderings SOO₂V, SO₂OV, OSO₂V, OO₂SV, O₂OSV, O₂SOV are likewise equally grammatical, with only rather slight differences in emphases.

(3.52)

Geet'e2e is aayyana irifa uwwito2o

S O₂ O V

'Gete gave her sister a present.'

A model that captures this free ordering in a natural way is to be advocated, neither as a somewhat artificial extension of a formalism devised on the basis of languages with more rigid order or greater configurationality, nor by setting apart free order languages for separate treatment under a W* label. [See the polemic against both approaches in Foley & van Valin(1984:1-24) and the concern expressed in Horrocks(1987) also].

3.1.2.5. Subject-Verb Agreement

Agreement within the Hadiyya clause is limited to that between subject and verb, where it is shown in the person, gender, and number categories outlined in 2.1.4. For example,

(3.53)

a. beeballa an diinate allaaram he2ummo

yesterday I livestock pasturing was

1s 1s/3ms 1s

'I was pasturing livestock yesterday'

b. beeballa an diinate *allaallam he2ummo

1s 1pl 1s

- a. soodo katama ki₂nuww mattakkamonnei?
tomorrow town you go-QU
2pl 2pl
'Will you go to town tomorrow?'
- b. soodo katama ki₂nuww *mattoohonni?
2pl 2sg
- c. soodo katama at mattoohonni?
2sg 2sg

d. sodo katama ki2nuww *marakkamonnihe?
 2pl 3res

(3.55)

- 5
- a. ku min / mineeww lomma2nukko
this house/houses be-old-3ms
'This house(s) are old'
- b. ku min / mineeww *lomma2nito2o
3fs
- c. ku minc lomma2nito2o
this little-house be-old-3fs
- d. goticc / got waarukko
hyena / hyenas came-3ms
'The hyena(s) came'
- e. goticc / got *waatto2o
3fs

5. Not pushing inchoative force here; also note lack of number agreement between demonstrative and plural noun.

(3.55) contd

f. meenticco waatto2o
 woman came-3fs

g. meenticco *waarukko
 3ms

h. manc waarukko
 man came-3ms

i. manc *waatto2o
 3fs

j. meent waarukko
 waatto2o

k. mann waatto2o
 waarukko

In summary, the so-called 3rd person masculine singular verb form occurs with all 3rd person subject nominals except those singular ones referring to human females, and diminutives (which are singulative and conceived to be feminine). It would seem from this that the use of the so-called 3rd person feminine singular verb form can only be defined disjunctively to refer to (i) female singular, (3.55c) and (3.55f), and (ii) human plural subjects, (3.55j) and (3.55k).

A historical explanation of this is proffered in Sim(1987), where it is suggested that the current skewed system is a result of the breakdown of the gender polarity system of an earlier stage in the development of the language; see also 2.1.4.1, and the question of [AGR] features is also discussed there. In essence a solution requires that the verb forms so far (informally) designated 3ms need be associated with the [AGR] value $\begin{bmatrix} \text{PERSON: 3} \\ \text{GENDER: ~FEM} \end{bmatrix}$. This will unify with the [AGR] values of all 3rd person nominals, except those specified [FEM], which

are the singular nominals referring to human females. At the same time, verb forms so far designated 3fs must be associated with the disjunctive [AGR] values

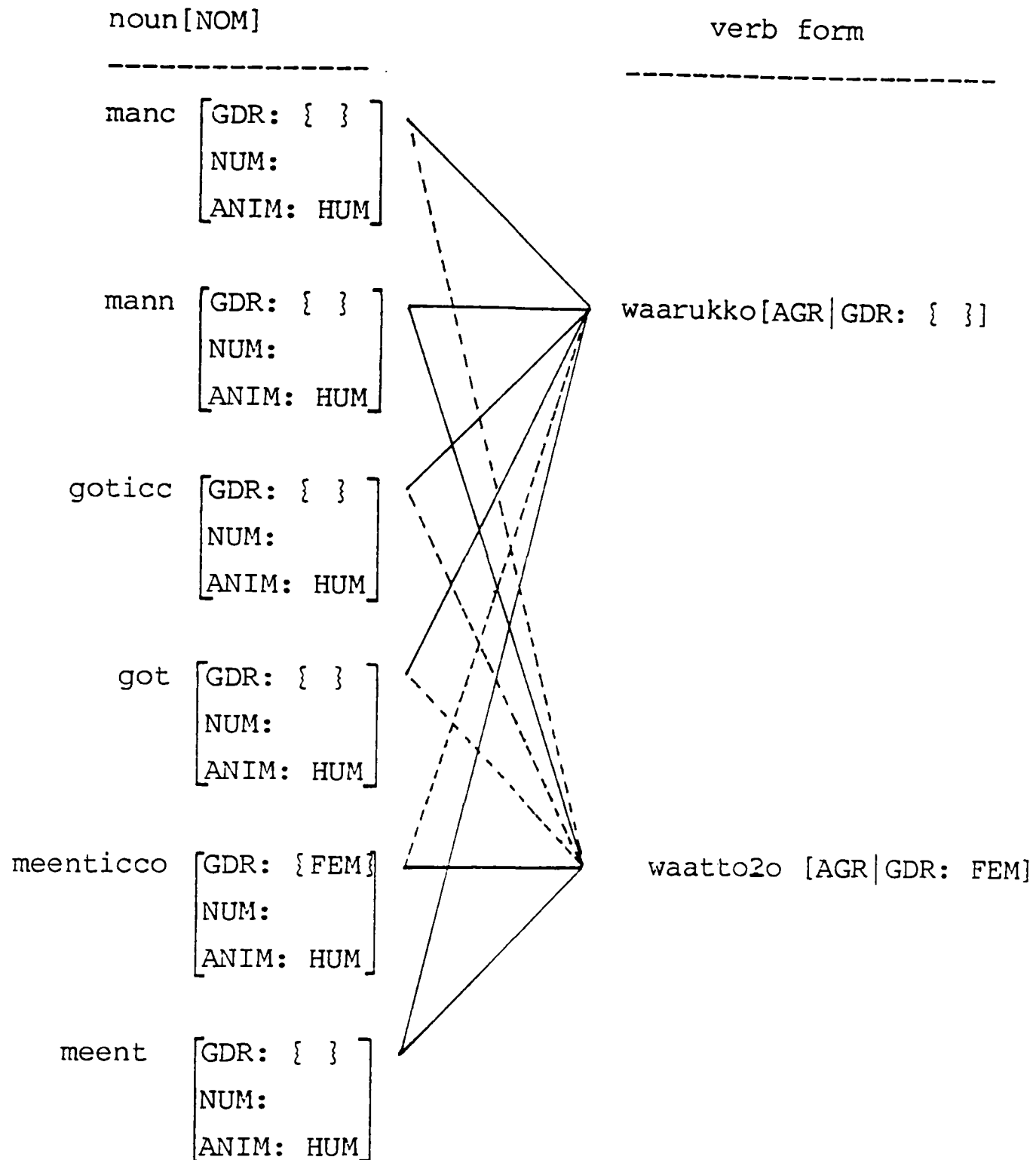
(3.56)

$$\begin{bmatrix} \text{PERSON: 3} \\ \text{GENDER: FEM} \end{bmatrix} \vee \begin{bmatrix} \text{PERSON: 3} \\ \text{NUMBER: PLUR} \\ \text{ANIM : HUMAN} \end{bmatrix}$$

Apart from not being very elegant, however, this raises the question about the substantive status of \sim FEM again (2.1.4.1), and about the introduction of a new attribute, ANIMACY, whose value is HUMAN. There is, to my knowledge, no other motivation for this attribute-value in Hadiyya syntax.

Anticipating 4.1.5.3.3 and following the kind of solution proposed by Sag et al(1984) to deal with person and number, one might consider applying an empty set value to GDR here, to capture the appropriate restrictions noted in (3.55) above. Thus, some outline such as that in (3.57) below might be put forward.

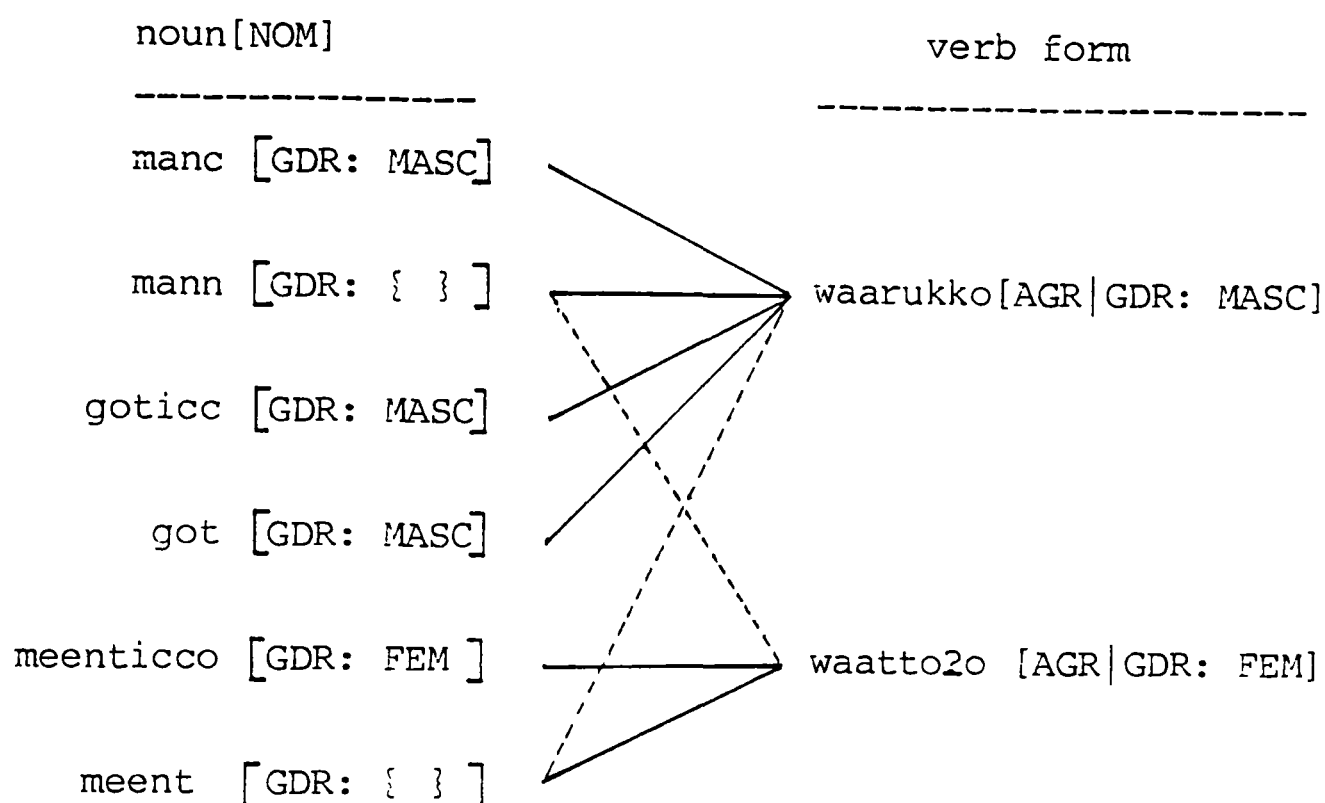
(3.57)



Clearly, not only do we get the collocations we want, there are other, unwanted ones, introduced by the fact that an empty specification can unify with any other value of that attribute. Sag et al(1984), in applying this approach to resolution rules in coordinate phrases, operated with a revised form of the Head Feature Principle, which stated that the head features on a mother was the intersection of the head features on all head daughters. Here, dealing with subject-verb agreement, it is clear that agreement is achieved by unification of certain features, and not by intersection, but in any case, an intersection solution would not work any better.

It should be obvious that no solution in which one value of GDR is the empty set can achieve descriptive adequacy, but will always over-generate. This is true even if some interacting set of values for NUM or ANIM is proposed. Rather than the above, then, I propose a solution outlined below:

(3.58)



This gives us exactly the desired collocations for descriptive adequacy. Whether mann and meent are specified as { } or [MASC v FEM] is more a matter of aesthetics than something substantive, at least if one permits feature disjunction, and is discussed briefly in 2.1.4.1. Assuming a former gender polarity to be operative, each of these words has apparently retained its former grammatical gender, and also added a natural gender specification. While it still seems true that this shift has been restricted to nouns denoting humans, no feature of animacy or humanness needs to be specified in the sign.

Note also, that the apparent disjunction in the specification of AGR in 3rd person verbal forms has been moved into the specification of nouns. This is intuitively a more satisfying solution, allowing AGR to avoid disjunct values, and placing this in the entity signs. This also suggests that the verbal agreement system was not restructured when polarity decayed, but

simply that the changes in gender specification had implications for verb agreement.

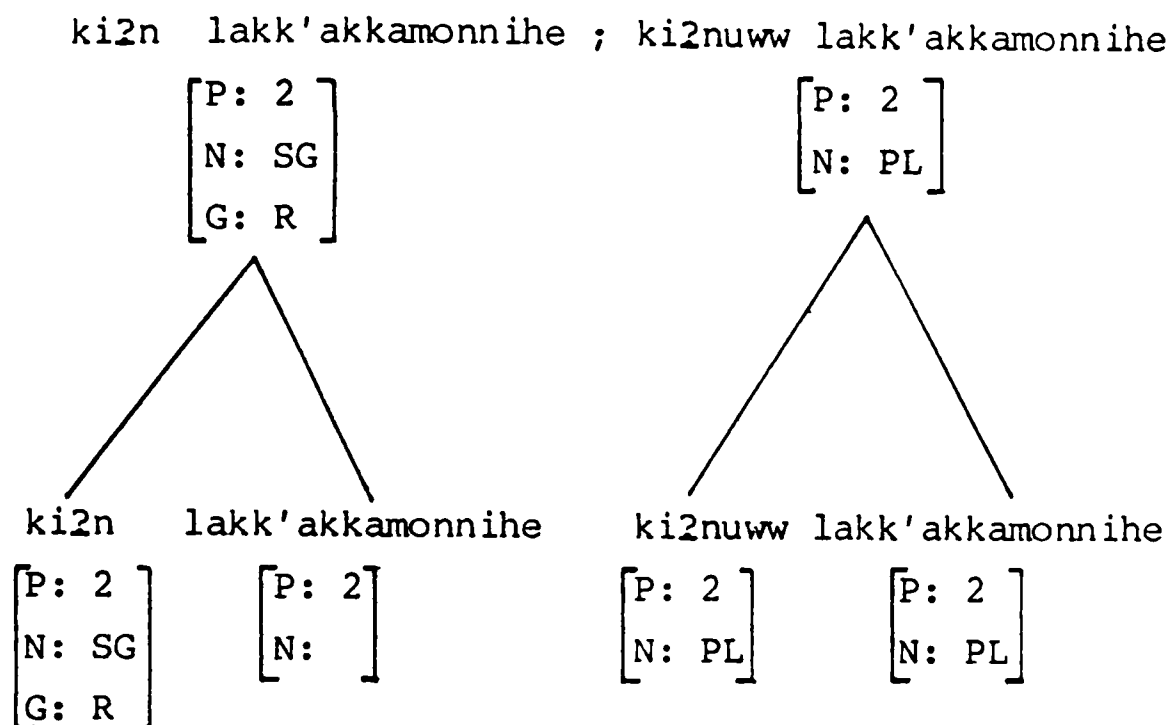
A further innovation of Hadiyya has been the extension of 2nd person plural verb forms to cover polite address to a 2nd person singular referent, and the corresponding shift of the earlier 3rd person plural to either unspecified subject, or respectful 3rd person singular reference. In the case of 2nd person, this leads to the situation where a 2sg noun form does properly control a 2pl verb form, although in terms of AGR features so far discussed it should not. A similar situation occurs with the former 3pl. These are illustrated in the following data.

$$(3.59)$$

- a. ki2n /ki2nuww hadiyyisina lakk'akkamullannihe
2res 2pl 2pl
'Do you know Hadiyya?'
- b. isse hadiyyisina la2akkamullannihe
3res 3pl ?
'Does he(hon) know Hadiyya?'
- c. hadiyyisina la2akkamullannihe
'Is Hadiyya known?' / 'Does one know Hadiyya?'

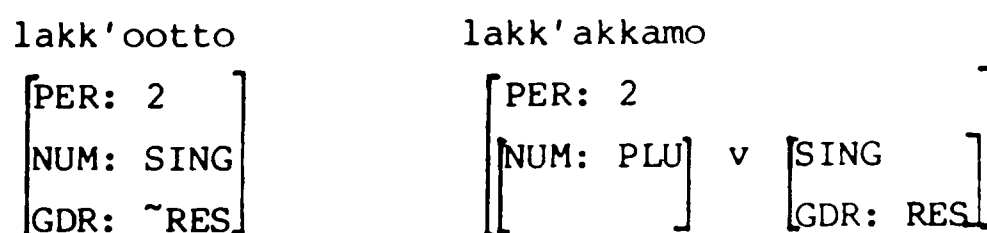
The essential agreement information required for each of these can be seen below:

(3.60)



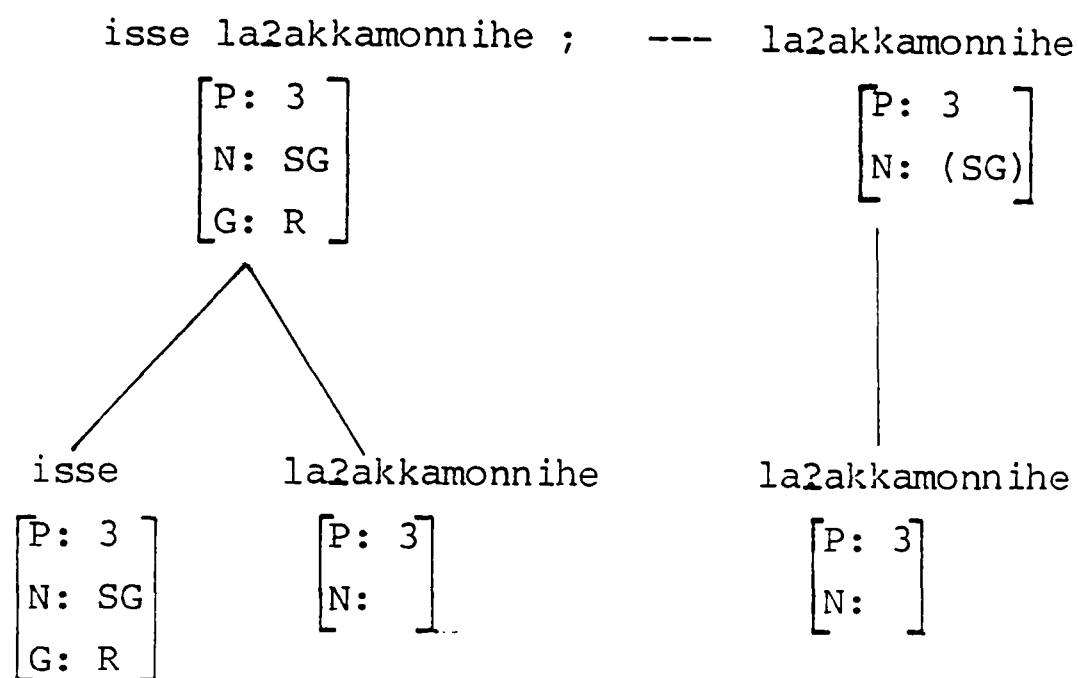
Gender is only specified on the respect pronoun ki2n 'you', and causes no problem for unification. If the verb form is specified as PLURAL, there is a problem concerning the unification with the singular pronoun, but if the verb form is unspecified for number, unification will be able to proceed without hindrance. This would be a happier solution than to propose that a disjunction of singular and plural is specified on the verb forms. Evidence against this is found in *ki2n lakk'ootto(2sg), *at(2sg) lakk'akkamo 'You know ...' These require that a disjunction of number and gender values is specified on the verb as the only way to ensure the correct cooccurrence of forms. Thus

(3.61)



Turning to a consideration of the third person forms, we have the following.

(3.62)



Here, there seems to be less problem as far as AGR information is concerned. la2akkamo is either used with the polite pronoun shown, or has no subject specified. It need only be specified for person, then, to allow isse to unify-in. But that does not prevent any 3rd person subject unifying with this sign; nor does it ensure that the alternative to isse is that there is no subject phrase. Again, this implies a disjunctive solution; and this time, the most obvious disjunction is to specify la2akkamo as either a respect form or a zero subject form -- hardly a natural disjunction, on anyone's terms. Undoubtedly this requires disjunctive lexical entries, one in which the verb sign specifies GDR:RES, and the other specifying zero subject.

Now, if the subject complement is last on the SUBCAT stack, in conventional HPSG, its absence is not enough to ensure an empty subject position in the sentence. The same is true if SUBCAT is an unordered set of categories. But, recall that in both of these architectures, a complement is cross-indexed to a role value. Thus

(3.63)

$$\left[\begin{array}{l} \text{PHON: la2akkamo} \\ \text{SYN|SUBCAT: } \{ \text{NP}_{[2]} \} \\ \text{SEM|CONT: } \left[\begin{array}{l} \text{REL: know} \\ \text{ROLE}_1: \\ \text{ROLE}_2: [2] \end{array} \right] \end{array} \right]$$

In (3.63), the empty ROLE_1 value, without any syntactic means for filling it, ie. with no $\text{NP}[\text{NOM}]$ in its SUBCAT list, ensures there can be no subject. Better, since no explicit subject is to be interpreted as meaning no identifiable subject, this role has the value $\text{ROLE}_1: x$, an open variable. Clearly, Borsley's (1987) solution, with a separate feature SUBJ: will work just as well, in just the same way.

It is not clear to me that a solution framed in terms of an AGR feature structure located within the semantic attribute would yield any better results on the above data. However, I do want to pick up the general outline of this alternative from 1.2.2.4, and consider it a bit further here.

Recall how the proposal for a semantically located agreement structure was arranged. This is formalised as follows for a nominal and a verbal sign respectively. Person, number and gender are made values of the referential parameter VAR of a nominal sign.

(3.64)

$$\left[\begin{array}{l} \text{SYN|HEAD|MAJ: N} \\ \text{SEM|CONT|IND|VAR: AGR: } \left[\begin{array}{l} \text{PER:} \\ \text{NUM:} \\ \text{GDR:} \end{array} \right] \end{array} \right]$$

(3.65)

[SYN|HEAD:	MAJ: V]		
		SUBCAT:	[SYN|LOC|HEAD|MAJ: N]	
			SEM|CONT|IND|VAR: [1]	AGR:	PER:)]
					NUM:			
					GDR:			
[SEM|CONT:	REL:]		
		ROLE ₁ : [1]						

The indexical nominal sign specifies AGR information within the referential parameter as noted in 1.2.2.4. This permits referential information to be included, for example gender of the speaker in French, accounting for utterances such as je suis heureux/heureuse 'I am happy'. Secondly, the referential VAR value of the subcategorised complement in the verbal sign shares information with the ROLE attribute. Actually, it means more than that. The role value is the complete semantic attribute of the subcategorised-for NP. To see what this entails, consider the incomplete string 'donkeys like ...' The two partial lexical signs are given in (3.66) and (3.67).

(3.66)

[	PHON: donkeys			-
	SYN|HEAD|MAJ: N			
	SEM|CONT:	[IND: VAR: [1] AGR: [PER: 3]]		
		[NUM: PLU]		
		RESTR: [REL: donkey]		
		[INST: [1]]		

(3.67)

[	PHON: like]
	SYN|HEAD:	MAJ: V	
		SUBCAT:	[SYN|LOC|HEAD|MAJ: N
			[SEM|CONT: [1]
	[SEM|CONT:	REL: like
ROLE ₁ : [1]			
ROLE ₂ : [2]			

And the unified sign, 'donkeys like' is as shown in (3.68).

(3.68)

[PHON: donkeys like]			
[SYN|HEAD: MAJ: V]			
[SEM|CONT: [REL: like]]			
[ROLE ₁ : IND: [VAR: [1] AGR: [PER: 3]]]			
[[NUM: PLU]]			
[RESTR: [REL: donkey]]			
[[INST: [1]]]]			

So, according to this, the parameter of variation picks out the relation 'being a donkey', and specifies that it must be plural. If it specified singular, apart from requiring a determiner also, the string 'donkey likes ...' would require the verb form to be 3rd singular. Information on person, number and gender no longer appears in the syntactic component of signs, but only in the semantic attribute.

It might be considered that one way of mitigating this admittedly uncomfortable result is to specify AGR in the nominal and verbal syntactic attribute, somewhat as follows.

(3.69)

[SYN: [HEAD|MAJ: N]]			
[AGR: [1] [PER:]]			
[NUM:]]			
[GDR:]]			
[SEM|CONT|IND|VAR: AGR: [1]]]			

(3.70)

[	SYN|LOC:	[]			
		HEAD: MAJ: V							
		AGR: [1]	[]				
			PER:						
			NUM:						
		SUBCAT:	{	SYN|LOC:	[]		
					HEAD|MAJ: N				
					AGR: [1]			[PER:
		SEM CONT:[2] IND|VAR|AGR:[1]]]]]		
GDR:									
]								
]			
SEM|CONT:		[	REL:					
	ROLE ₁ : [2]								
]								

These signs look more comfortable, with person, number and gender as syntactic categories, but, since this does not imply they are more inherently syntactic than semantic, only that information in both locations must match, there is little substantive gain, and a certain degree of additional redundancy.

A second approach might be to accept that person, number and gender information on indexical signs is correctly specified in their VAR attribute, but insist also that an agreeing category, for example, a verb, specifies its agreement as a matter of syntax. Thus:

(3.71)

[	SYN	|	HEAD	|	MAJ: N]
	SEM	|	CONT	|	IND|VAR: AGR: [1]	[PER:]
						NUM:
						GDR:]

(3.72)

[SYN|HEAD:	MAJ: V]		
		AGR: [1]	PER:			
			NUM:			
			GDR:			
		SUBCAT:	{		[SYN|LOC: HEAD|MAJ: N]	{
					[SEM|CONT: [2]	
		SEM|CONT:	REL:		[
ROLE ₁ : [2]						

It seems to me that this approach has a lot to commend it, in that it allows for the information structure to be a referential parameter on indexical heads, but still retains the traditional insight that agreement is a syntactic matter. Languages with grammatical gender that is sometimes in conflict with natural gender presumably mark that in the syntax attribute.

For the particular noun and pronoun subjects discussed above in this section, there seems to be little to be gained by such added complexity, but with agent nouns as subject, namely such nouns as bat'aanco 'worker, abuullaanco 'farmer' etc, gender depends on the individual denoted, and that has implications both for the form of the subject in Nominative, and the verb form in agreement with it. Also, although gender is a marked feature of most Hadiyya proper nouns (final -e for female's names, -o for males, as in Ergooge, Tissooro), there are names which violate that general rule, such as Leega2a (f), Hank'ore (m). In addition, foreign names from Amharic have no gender marked morphologically, and in those cases it can only be assigned referentially.

A mixed agreement system such as that now proposed, will capture these aspects of the problem. Finally, I show it in application to the nominal clause in 3.2.1.2 below and 5.2.2.2.

3.2. THE NOMINAL CLAUSE.

Attention in generative linguistics has been concentrated on the verbal sentence, with copular clauses, as found in English and other European languages, subsumed under VP nodes. [This point is well made in Woodbury(1985:84)]. There is some justification for this from the facts of English and European languages' copular constructions, in which the copular verb 'be' may conjugate for person (am, are, is etc) and 'tense' (is, was, (will) be etc), and can be held to be a verb governing NP complements as any other verb.

A second factor that undoubtedly influenced this trend is the atomic conception of 'category' in work before the 1980s. If 'is' is held not to be a verb, and 'is a teacher' or 'is sick' are not VP, what kind of nodes are they? Recent developments, towards dissolving atomic categories into feature bundles is a calisthenic which encourages alternative approaches to these issues.

In many languages, and Hadiyya is one of them, analysis of copular constructions, or nominal clauses, in terms of VP and V nodes is simply not plausible: there is simply no constituent, neither word nor morpheme, that can be assigned to a category label V or VP; that is, there are no markers of tense or aspect, and no form of person or number agreement between grammatical subject and "verb", and yet at the same time, it is clear that in such non-verbal clauses, one argument is predicated of another, in an apposition-like relationship, but which differs from apposition at phrase level intonationally, and in the complete absence of any copular element.

In the remainder of this section the relevant data is discussed, and I will propose a solution within a unificational framework that recognises the status of the non-verbal sentence. Then in 3.2.2, I will go beyond what is strictly necessary for concern with the non-verbal clause, and seek to provide a wider background, as this is of interest in Hadiyya.

3.2.1 The Nominal Clause.

3.2.1.1 The Nominal Clause & the Copula.

The simplest non-verbal clause predicates one nominal of another, in appositional-like relationship.

(3.73)

- a. iyyann abuullaanco
my-father farmer
'My father is a farmer'
- b. an astamaarekkicco
I teacher
'I am a teacher'
- c. laapp'is niyyabbaayyo
Lapiso our-brother
'Lapiso is our brother'

The first NP (here, word) in each example is the notional subject, and since iyyann, an and laapp'is are marked as Nominative Case, we may agree it is the grammatical subject also. The second noun is predicated of the first, and I will refer to it as the predicate-complement of the copular construction or nominal clause. When the subject is of feminine gender (ie. human female reference), however, this complement is marked by a clitic, -tte. There is neither an overt verb nor a copular element in the above examples.

(3.74)

- a. ise hadiyyiccotte
she Hadiyya-COP
'She is a Hadiyya'
- b. ergooge iyyaayyette
Ergooge my-sister-COP
'Ergooge is my sister'

- c. an borborette
I Borbore-COP
'I am Borbore'
- d. is summ leega2atte
her name Leega2a
'Her name is Leega'

Note here that the clitic occurs not only when the subject is inherently marked [FEM], but also when its referent is feminine, as in (3.74c).

This clitic is obligatorily absent when the subject is not [FEM], or when the referent is not a human female, except in the naming relation, in which case it is obligatorily present, even with human male referents as subject. Some evidence that it is the naming relationship that is correctly identified as the relevant feature here is obtained from the fact that the copula is cliticised when it is an animal that is being named, (3.75d), although not when it is a place, (3.75e).

(3.75)

- a. itt' tesfayette
he Tesfaye-COP
'He is Tesfaye'
- b. an ronaldette
I Ronald-COP
'I am Ronald'
- c. i summ laapp'isotte
my name Laapiso
'My name is Laapiso'
- d. ku mirgo2o baaccette
this ox Baache
'This ox is Baache'

- e. ku beyy lambuuda
 this place Lambuuda
 'This place is Lambuuda'

The negative of such clauses is formed by suffixing the negative marker used with [FNL] verbs, -yyo.

(3.76)

- a. iyyann abuullaancoyyo
 my-father farmer-NEG
- b. an astamaarekkiccoyyo
 I teacher-NEG
- c. laapp'is niyyabbaayyoyyo
 Lapiso our-brother-NEG
- d. ergooge iyyaayyatteyyo
 Ergooge my-sister-COP-NEG
- e. an borboretteyyo
 I Borbore-COP-NEG

Notice that the copula is obligatory in the negative sentence, with all feminine complements, and is absent, even in the naming relation, from all masculine complements.

The nominal clause forms polar questions by suffixing the question marker -nnihe, or by intonation alone, (3.77d).

(3.77)

- a. kuk ki minennihe?
 This your house-QU
 'Is this your house?'
- b. oo meenticco kiyyaayyattennihe?
 that woman your-sister-COP-QU
 'Is that woman your sister?'

- c. itt' laapp'isottennihe?
he Laapiso-COP-QU
'Is he Lapiso?'
- d. itt' laapp'isotte?
he Laapiso-COP

Notice here how the copula is retained with masculine complements in a naming relation. Turning now to content questions, non-verbal questions like the following are found.

(3.78)

- a. kuk marucco?
this what
'What is this?'
- b. ki summ ayyette?
your name who-COP
'What is your name?'
- c. ki min hanno?
your house where
'Where is your house?'
- d. kuk ayy mine?
this whose house
'Whose house is this?'
- e. hink manco gamaanc?
which man thief
'Which man is a thief?'
- f. boobico hinka2n k'eraa2la
Bobicho how far
'How far is Bobicho?'

In natural dialogue the question word can occur alone. The question word can be the complement head, or attributive to a

nominal. Note that in hink manco gamaanc, the subject gamaanc is postposed to follow its predicate-complement.

I have several times drawn attention to the fact that, in (East) Cushitic, an element t is commonly recognised to be an old feminine gender marker. From the above data, what I have referred to as copula has rather obvious similarities to a gender marker, in that it always occurs with feminine complements, but this identification is complicated by two observations. First, that it occurs also with complements whose head is a proper noun with male reference, and secondly, that it is restricted in occurrence to complements in a non-verbal clause, and occurs on neither subject nor object, nor on an oblique-case NP in verbal clauses having female reference. Compare the dependent nominal clause below. Note also its occurrence in certain converbial-questions, 3.1.1.3, and coordinate converbs, 4.1.4.

This latter point as clearly defines -tte as copulative in nature as its occurrence with all feminine complements links it with gender; exactly why it should occur with male proper names in a complement is not clear to me, beyond the trivial observation that it is an extension of use.

When the predicate nominal is not a singular form, the copula is obligatorily absent. Compare what has been said about gender in the modern language in 3.1.2.5 above: there are no plural nouns which are uniquely specified as feminine.

(3.79)

itt'uww abuullaano 'they are farmers'
*itt'uww abuullaanotte

neese meenta 'we are women'
*neese meentatte

ku meent er bat'aano 'these women are good workers'
*ku meent er bat'aanotte

The above observations hold true when the predicate complement is an adjective; that is, a copula -tte is obligatorily present when the subject is inherently or referentially human female and singular.

(3.80)

- a. an k'eraa2la / k'eraa2latte
I tall tall-COP
- b. itt' geejja / *geejjatte
he large
- c. ise *geejja / geejjatte
she large
- d. ergooge*wic'a / wic'atte
Ergooge thin-COP
- e. neese biijaalluwwa / *biijaalluwwatte
we generous-pl
- f. ku land geejjuwwa /*geejjattewwa
these girls large

Recall my suggestion that when gender was a fully grammatical system in Hadiyya, and a system of gender polarity was operative, we would expect a regular system thus:

(3.81)

[+FEM & +SING]	t
[-FEM v -SING]	non-t

Complements which take t in singular take -wwa in plural. Zaboriski calls *-wa a nominal pluraliser. It seems to me possible that both w and t were associated at least as much with gender as with number and that number distinctions fall out from this primary function.

When the complement is pronominal, or is the question word ayye 'who', the copula is obligatory, in this case even with plural subject, and independent of the gender of the referent.

(3.82)

- a. anette 'It's I'
 neesette 'It's us'
 atette 'It's you(sg)'
 isette 'It's her'
 itt'otte 'It's him'
- b. at ayyette? 'Who are you?'
 ki summ ayyette? 'What's your name?'

In the first group, (3.82a), it might be asked if the pronoun is in Nominative or Accusative Case?⁶ Hadiyya has the following oppositions in pronominal case:

(3.83)

accusative	nominative	

eese	an	1 sing
keese	at	2 sing
itt'o	itt'	3 masc sing

It is the so-called Accusative forms in (3.83) that function as the Absolutive Case object of a verb in a verbal clause, for example, see Hudson(1976:258). But note also the stem vowel in anette, which does not reflect the expected Nominative in -i. All HEC languages use Absolutive pronouns in non-equational copular sentences. Kambaata and Hadiyya show different independent pronouns for some forms. The data in (3.83) suggests the use of Nominative pronouns in the examples for 1st

6. I use Accusative rather than Absolutive here, for reasons that are obvious.... Absolutive designates the citative form; yet certain of these citative forms appear to employ Nominative Case in their derivation.

and 2nd person singular, but Accusative in the example of 3rd masculine singular.

Secondly, the picture is complicated by a consideration of oblique-case complements. Not only can these complements carry the copula, but in a parallel clause in which the complement concerned is in Absolutive Case, there is no copula present. The following data illustrates the range of forms.

(3.84)

- a. barc'um hanennette
 stool top-on-COP
 '(It's) on top of the stool'

- b. i min { ekke2ette
 i mi2n beyy {
 my house('s place) there-COP
 'My house is there'

- c. ki min {hinke2ette?
 {hinkane? / *hinkanette
 your house which-COP
 'Which is your house?'

- d. ka-ball {saantannette
 {saanta / *saantatte
 today week-on-COP
 'It's (on) last week'

- e. kiinatte
 'It's for you'

- f. iinatte
 'It's for me'

These data are drawn from cohesive text, or noted in free conversation, in which the statements form the answers to questions which were posed in the form of cleft sentences

focussed on an NP[QU] carrying the copula (see (3.13) above, in 3.1.1.3). Responses with -tte are explicitly copular; the copula can often be omitted, and an unmarked nominal clause used instead (see (3.84c) and note especially (3.84d)).

Thirdly, when a nominal clause is moved into a subordinate relationship relative to an embedding verb or sentence, the copular verb ih- is used, while the nominal complement retains whatever marking with -tte it would carry as a syntactically independent clause.

(3.85)

- a. ise geejjat ikko2 bikkina
she large-COP be-3fs because

erisa geetta2a t'antamoyyo
well running she-able-NEG
'Because she is large she can't run well'

- b. an erisa la2oomm googonnet ihoomm ammane
I well I-know road-on-COP I-be time

lobakata taakke2oommo
greatly I-walk
'When I am on a road which I know well,
I really step it out'

- c. an mat mat ammane mišisoo sawwit' woronnet
I one one time fruitful thinking inside-COP

ihoomm ammane lobakata liiramoommo
I-be time greatly I-happy
'Sometimes when I am deep in productive thought
I am very happy'

- d. ise losisaancot ikko2 bikkina ta2manto2oyyo
she teacher-COP she-be because she-asked-NEG
'Because she is a teacher she is not married'⁷

7. The final verb here is a 3rd person plural passive or impersonal with -am-, reading 'she wasn't asked.'

In such examples, the copula is generally recorded as -t rather than -tte. It may be that this is due to irrecoverable vowel elision before the close front vowel of the following verb root, but it is more likely that both NPs are Nominative, and linked by a copular verb. See (3.36) in 3.1.2.3, and the comments there.

3.2.1.2. Formalisation.

Hadiyya has been well exemplified as showing the following data. How can such nominal clauses be formulated?

(3.86)

- a. itt' astamaarekkicco
'He is a teacher'
- b. ise iyyaayyatte
'She is my sister'
- c. itt' t'arapp'ezzannette
'He is on the table'

In such there are two arguments, in an equational or locative relationship, although the first, Nominative argument is frequently optional.

Consider how these simple clauses may be built up under unification. Start with the following signs, Ersulle 'Ersulle' and iyyaayyatte 'my-sister' (copulative form).

(3.87)

[PHON: ersulle	
SYN|HEAD:	[MAJ: N
	HFORM: +
	CASE: NOM]
SEM|CONT:	[IND: VAR: [1] AGR: [PER: 3
	NUM: SING
	GDR: FEM]
	RESTR: RELN: [NAME: Ersulle]
	INST: [1]]]

(3.88)

[PHON: iiyyaayya-tte	
SYN|HEAD:	[MAJ: N
	HFORM: PRD
	CASE: ABS
	ADJUNCTS: { NP[NOM] }
SEM|CONT:	[IND: VAR: [1] AGR: [PER: 3
	NUM: SING
	GDR: FEM]
	RESTR: [RELN: my-sister]
	INST: [1]]]

Suppose the second sign to be selected as a head, from which to unify in other constituents as necessary. We are going to require a rule of the form $s[NP\ NP]$, following Woodbury (1985:84). Then, I propose adopting here the attribute [PRD] to handle predicative uses of the nominal phrase. This will be a third value for $HFORM = \{ +, -, PRD \}$; see 2.2.3. The sign is specified as PRD, signifying that it can be the head of a sentential construction, and it is required to unify with an NP[NOM].

How is such unification to be controlled? One solution would be to set up a suitable Adjuncts Rule, such that any nominal specified to be PRD can take an adjunct NP[NOM]. I will therefore assume here that all nominals carry the category-valued feature ADJUNCTS, thus:

(3.89)

$$\text{SYN|LOC|HEAD:} \left[\begin{array}{l} \text{MAJ: N} \\ \text{ADJUNCTS: } \{ \text{NP[NOM]} \} \end{array} \right]$$

I also roughly formulate an Adjuncts Rule, which licenses the expansion of a PRD-marked nominal by an adjunct:

(3.90) (Adjuncts Rule, version 1)

$$\left[\begin{array}{l} \text{DTRS: HD-DTR|SYN|LOC|HEAD:} \left[\begin{array}{l} \text{HFORM: PRD} \\ \text{ADJUNCTS: [1]} \end{array} \right] \\ \text{ADJ-DTR|SYN: [1]} \end{array} \right]$$

The intent of the rule is to specify a constituent that has a head daughter PRD and an adjunct daughter whose syntax value is the same as that specified on the head daughter. A nominal sign such as (3.88) will therefore unify with the information in the rule, (3.90) and a suitable adjunct-category sign (3.87).

It still must be made clear how agreement restrictions between the two NPs are to operate in such cases. Secondly, note that both NPs specify agreement structures under VAR of the semantic attribute. Some means must be stipulated to control the permissible values of these two structures. (3.90) must be made more specific. Consider the fuller specification for (3.88) in (3.91).

(3.91)

PHON:	iiyyaayya-tte												
SYN HEAD:	MAJ: N												
	HFORM: PRD												
	CASE: ABS												
ADJUNCT:	<table> <tr> <td>SYN LOC HEAD:</td><td>MAJ: N</td></tr> <tr> <td></td><td>HFORM: PRD</td></tr> <tr> <td></td><td>CASE: NOM</td></tr> <tr> <td></td><td>AGR: [1]</td></tr> </table>	SYN LOC HEAD:	MAJ: N		HFORM: PRD		CASE: NOM		AGR: [1]				
SYN LOC HEAD:	MAJ: N												
	HFORM: PRD												
	CASE: NOM												
	AGR: [1]												
	SEM CONT: [3]												
SEM CONT:	<table> <tr> <td>IND: VAR: [1] AGR:</td><td>PER: 3</td></tr> <tr> <td></td><td>NUM: SING</td></tr> <tr> <td></td><td>GDR: FEM</td></tr> <tr> <td>RESTR:</td><td>RELN: my-sister</td></tr> <tr> <td></td><td>INST: [1]</td></tr> <tr> <td></td><td>ROLE: [3]</td></tr> </table>	IND: VAR: [1] AGR:	PER: 3		NUM: SING		GDR: FEM	RESTR:	RELN: my-sister		INST: [1]		ROLE: [3]
IND: VAR: [1] AGR:	PER: 3												
	NUM: SING												
	GDR: FEM												
RESTR:	RELN: my-sister												
	INST: [1]												
	ROLE: [3]												

This sign now ensures that the semantic contents of the adjunct is a role in the relation of 'being my sister' and specifies that the AGR value of the adjunct and the indexical occupying this role are compatible. Note that the predicate-complement has sprouted a ROLE value! Roles are not part of the semantic attribute of an indexical sign, and this must be made part of the adjuncts rule, now revised thus:

(3.92) (Adjuncts Rule, version 2)

SEM CONT ROLE:	[2]																
DTRS:	<table> <tr> <td>HD-DTR:</td><td> <table> <tr> <td>SYN LOC HEAD:</td><td>MAJ: N</td></tr> <tr> <td></td><td>HFORM: PRD</td></tr> <tr> <td></td><td>ADJUNCTS: [1]</td></tr> <tr> <td>SEM CONT:</td><td>[2] IND VAR AGR: [3]</td></tr> </table> </td></tr> <tr> <td>ADJ-DTR:</td><td> <table> <tr> <td>SYN LOC:</td><td>[1]</td></tr> <tr> <td>SEM CONT:</td><td>[2] IND VAR AGR: [3]</td></tr> </table> </td></tr> </table>	HD-DTR:	<table> <tr> <td>SYN LOC HEAD:</td><td>MAJ: N</td></tr> <tr> <td></td><td>HFORM: PRD</td></tr> <tr> <td></td><td>ADJUNCTS: [1]</td></tr> <tr> <td>SEM CONT:</td><td>[2] IND VAR AGR: [3]</td></tr> </table>	SYN LOC HEAD:	MAJ: N		HFORM: PRD		ADJUNCTS: [1]	SEM CONT:	[2] IND VAR AGR: [3]	ADJ-DTR:	<table> <tr> <td>SYN LOC:</td><td>[1]</td></tr> <tr> <td>SEM CONT:</td><td>[2] IND VAR AGR: [3]</td></tr> </table>	SYN LOC:	[1]	SEM CONT:	[2] IND VAR AGR: [3]
HD-DTR:	<table> <tr> <td>SYN LOC HEAD:</td><td>MAJ: N</td></tr> <tr> <td></td><td>HFORM: PRD</td></tr> <tr> <td></td><td>ADJUNCTS: [1]</td></tr> <tr> <td>SEM CONT:</td><td>[2] IND VAR AGR: [3]</td></tr> </table>	SYN LOC HEAD:	MAJ: N		HFORM: PRD		ADJUNCTS: [1]	SEM CONT:	[2] IND VAR AGR: [3]								
SYN LOC HEAD:	MAJ: N																
	HFORM: PRD																
	ADJUNCTS: [1]																
SEM CONT:	[2] IND VAR AGR: [3]																
ADJ-DTR:	<table> <tr> <td>SYN LOC:</td><td>[1]</td></tr> <tr> <td>SEM CONT:</td><td>[2] IND VAR AGR: [3]</td></tr> </table>	SYN LOC:	[1]	SEM CONT:	[2] IND VAR AGR: [3]												
SYN LOC:	[1]																
SEM CONT:	[2] IND VAR AGR: [3]																

Admittedly still approximate, this does seem to rough out an analysis of the nominal complement in Hadiyya, and a unification of the signs (3.87), (3.91) with the rule (3.92) outputs the

following string (3.93) and unified sign (3.94). More will be said about adjuncts in Chapter 5.1.

(3.93)

Ersulle iiyyaayyatte
'Ersulle is my sister'

(3.94)

[PHON: ersulle iiyyaayyatte]	
SYN|HEAD:	[MAJ: N]	
	HFORM: PRD		
	CASE: ABS		
	ADJUNCTS: { [1] NP[NOM] }		
SEM|CONT:	[IND: VAR: [1] AGR: [PER: 3]	
		[NUM: SING	
		[GDR: FEM]	
	RESTR: [RELN: my-sister]	
	INST: [1]		
	ROLE: Ersulle]	
[]	

So far, so good! But look now at similarly simple, and apparently equally trivial examples.

(3.95)

a. an astamaarekkicco(tte)

'I am a teacher'

b. at astamaarekkicco(tte)

'You are a teacher'

The Nominative NP and the predicate-complement must agree in gender and number; but not in person, so that strings like 'I/you/he am/are/is a teacher' each employ the same surface form of the predicate-complement.

As noted above, the appropriate value for gender is derived referentially. But the syntax attribute of the signs concerned

apparently fail to unify because of the clash of values for PER.

(3.96)

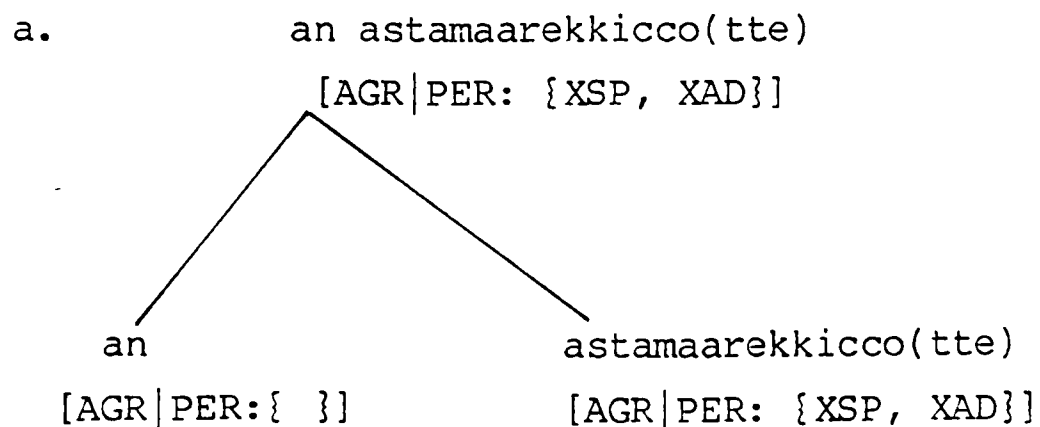
[	PHON: an]
[	SYN|HEAD: [MAJ: N CASE: NOM]]
[	SEM|CONT: [IND: VAR: [1] AGR: [PER: 1 NUM: SING]]
[	RESTR: RELN: I]

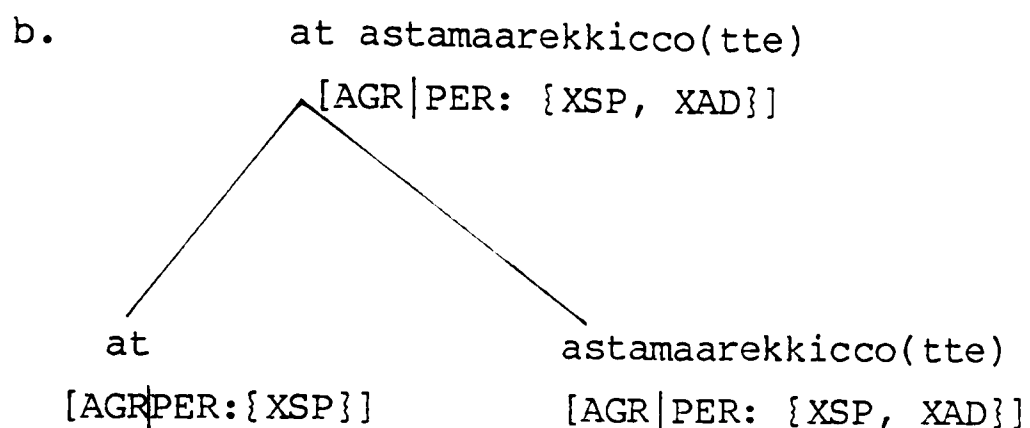
(3.97)

[	PHON: astamaarekkicco(tte)]
[	SYN: [HEAD: [MAJ: N HFORM: PRD CASE: ABS]]
[	ADJ: { [SYN|LOC|HEAD|MAJ: N [SEM|CONT: [2] IND|VAR|AGR: [1]] }]
[	SEM|CONT: [IND: VAR: [1] AGR: [PER: 3 NUM: SING]]
[	RESTR: [RELN: teacher INST: [1] ROLE: [2]]

The problem resolves itself if we employ the person-value set motivated in Chapter 4. Thus, PER = { 0, XSP, XAD }, where { } = 1st, {XSP} = 2nd, and {XSP,XAD} = 3rd. The unifications are summarised in (3.98) below.

(3.98)





The only real difficulty with the above approach, is whether the subject NP has properly been identified as an adjunct, rather than a complement. Once a nominal has been postulated to be a predicate-complement, a principle of the grammar ought simply to be able to ensure that it is subcategorised for an NP[NOM] complement. In this alternative, an NP[PRD] sign inherits a feature structure SUBCAT: {NP[NOM]} from the hierarchy of types in the lexicon; this is a more satisfying analysis than the adjunctival one laid out above. The details of its operation, and the way in which it handles agreement carry over. This approach has the added benefit that the predicate NP head of a cleft sentence also now subcategorises for a subject NP. Where that subject is a relative clause, the Case of the predicate complement and the Case of the category on the binding stack of the relative clause must correspond. This will specify that gap and filler can correctly unify; see (3.14) and comments there.

There is finally, the question of whether forms with attached copula should be formulated in syntax, or by means of a lexical rule for cliticising the copula. The question cannot be persuasively answered in an empirical way without a lengthy treatment of the way in which morphology (and phonology) is handled in HPSG; it is perhaps more conventional in recent work to assign this to the lexicon, but note again, as in 2.2.3, that the architecture of HPSG, with its uniform sign format in both lexicon and syntax, is amenable to both approaches. See also 4.1.5, where the relationship of phonology to syntax arises.

3.2.2. Suppletion.

Apart from the data presented above, there is a great deal of suppletion in the realisation of copular constructions in Hadiyya, and in the following two sub-sections I propose discussing this.

3.2.2.1. Tense-Aspect Suppletion.

To this point, all nominal clause data is "present-time", or rather is not marked temporally. In Hadiyya the nominal clause sensu strictu is limited to present-time usage, and in other tense-aspects the clause contains a verbal element, which will also be seen to be copular, rather than carry lexical meaning, in what follows. When the temporal location of the proposition is not the same as that of the utterance, the verbs he2- and ih- are used.

(3.99)

- a. an astamaarekkicco he2ummo
I teacher I-was
'I was a teacher'
- b. iyyann abuullaanco he2akko2o
my-father farmer he-was
'My father was a farmer'
- c. niyyabbaayy k'eraa2la ihookko
our-brother tall he-will-be
'Our brother will be tall'
- d. an losano guullaa ki2aa losisaanco ihoommo
I study completing teacher I-will-be
'After completing studies, I will be a teacher'
- e. i landa ladiiseena illageen an goddaanco he2ummo
my girls marrying before I rich-man I-was
'I was a rich man before my girls married'

- f. ergooge c'iila k'atteenaa illage wic'atte he2lo2o
 Ergooge baby she-bore-SJ1 before thin-COP she-was

he2- is used for past-time reference, and ih- for future time reference. he2- can be glossed as 'be', and is also used as an auxiliary verb in Hadiyya in the formation of both past perfect and past continuous (2.3.1.2, Table II). Its use as a main verb is introduced below. ih- can be glossed as 'become', although an inchoative sense should not be assumed, and is also used for dependent nominal clauses. See 3.2.1.1 and below. The formalisation of these strings basically requires that the verbal element is head of the clause, and through its subcategorisation, expands the constituents as outlined in 3.1.2 above. For the above data, we set up subcategorisation he2-[VFORM:PERF; SUBCAT: {NP, NP[NOM]}] and ih-[VFORM:IMPF; SUBCAT: {NP, NP[NOM]}].

(3.100)

- a. ise astemarekiccotte he2lo2o
 she teacher she-became/was
- b. manninne geja aagaat ihukko, te2im mullatem ihukko
 with-men gang enter-COP it-be or alone it-be
 'It may be he enters with a work gang, or alone..
 [from 'How a Farmer Works]
- c. dawwa issaat ihukko te2im manninne geja aagaat ihukko
 meals making it-be or with-men gang entering it-be
 'It may be he prepares worker's meals or goes in with
 the work gang..
 [from 'How a Farmer Works]

In such examples, a converb is subordinated to an modal auxiliary by suffixing a copulative form.

Signs for all such forms will make use of the attributes LOCATION and RESTRICTION, thus.

(3.101)

SEM:	CONTENT:	RELATION:	[1]
		ROLE:	
		LOCATION:	[1]
SEM:	REFERENCE-MARKER	VARIABLE:	[1]
		RELATION: =	
		RESTRICTION:	
		ARG ₁ :	[1]
		ARG ₂ :	1 _d

That is, the spatio-temporal LOCATION of the proposition is the same as, RELATION: =, the spatio-temporal location of the utterance, ARG₁: 1_d. A proposition which preceded the time of utterance would have the value RELATION: <, and one which follows the time of utterance will have the value RELATION: >. he2- will be specified SEM|REF-MKR|REL:< and ih- is SEM|REF-MKR|REL:>. The -tte copula is SEM|REF-MKR|REL:=.

3.2.2.2. The expression of being & possession.

The suppletion found when nominal clauses are pushed out of present-time context overlaps with suppletion forms in other locational or existential expressions.

Consider first the following data, in which he2- 'live, dwell' occurs with its full lexical meaning.

(3.102)

- a. ayyaall ka-beyyonne he2ukkonnihe?
Ayyaallo this-place he-live-QU
'Does Ayyaallo live here?'
- b. waaccamonne lobakat minaadab he2ookko
Waaccamo-on many people he-live
'Many people live in Waacamo'
- c. ka ammanenne an hoff minconne he2oommulla
this time-on I small house-on I-am-living
'At present I am living in a small house'

- d. la2m maarageena lob minenne he2oommo
 next year big house-on I-live
 'Next year I will live in a big house'
- e. lud maarage lob minenne he2ummo
 last year big house-on I-live
 'Last year I lived in a big house'

In such examples he2- is used with its full lexical meaning, in the sense of 'dwell, live in'. For this, he2- is subcategorised [SUBCAT: {NP[LOC], NP[NOM]}]. Perhaps in a weaker sense this is the usage found in the opening lines of many fables, which typically begin by introducing the main participant:

(3.103)

mat manc (meenticco) he2ukko (he2lo2o)
 one man (woman) lived (lived)
 'There lived a man (woman)' ...
 or 'There was a man (woman)' ...

Generally the opening sentence is a full sentence like this; occasionally it may be phrased as a medial clause, mat mancii mat meenticcoo he2ukkuyy ... 'While there lived a man and his wife ...'

With this reading, the NP[LOC] suggested above is obligatorily absent, and this would apparently require a disjunct SUBCAT.

Secondly, as well as mat'aafa t'arapp'ezzannette 'A book is on the table' (cf (3.84) above), Hadiyya can also express this mat'aafa t'arapp'ezz hanenne/ t'arapp'ezanne yookko, lit. 'A book is present on the table', or 'There is a book on the table.' Notice that the verbal form yookko has a subject, mat'aaf in Nominative Case. So also the following examples from cohesive text.

(3.104)

- a. hobb topp'e2 uullannette
 lion Ethiopia land-on-COP
 Nom Loc-Cop
 'Lions are in Ethiopia'
- b. topp'e2 uullanne hobb yookko
 Ethiopia land-on lion present
 Loc Nom V
 'In Ethiopia, lion is present/there is lion'
- c. ka daajjenne k'urt'ume2 yookko
 this river-on fish present
 'There are fish in this river'
- d. hadiyy uullanne lobakat losan yookko
 Hadiyya land-on many customs present
 'There are many customs in Hadiyya-land'
- e. waaccamo aagisoo soor goog yookko
 Waacamo enter four road present
 'There are four roads entering Waacamo'

The verb root here is y-, which I have glossed as '(be) present', but which clearly has little semantic content, and serves only as copula, to link subject(topic) with a complement (comment).

Here, y- is subcategorised SUBCAT: {NP[LOC], NP[NOM]}, although in (3.104e), only a single, NP[NOM] is required.

In a brief digression, it is interesting to compare this with data from Amharic, which is also SOV in type.

(3.105)

- a. bǎ-itiyop'ia anbassa allǎ (existential)
 Loc Nom V
 'Lions are in Ethiopia.'
- b. anbassaw bǎc'ak'a nǎw (locative)
 Nom Loc Cop
 'The lion is in the bush.'

Clark(1978) finds these orders to be highly correlated with SOV typology, and Hadiyya here is seen to conform. However, she suggests that these orders are to be explained in terms of grammatical parameters of Definiteness and Animacy, summarising the ordering in two so-called "Discourse Rules", thus

(3.106)

- Rule 1: Loc. < Nom
 [+Def] [-Def]
 ie. the locational NP precedes the subject NP
- Rule 2: [+Anim] < [-Anim]
 ie. an NP[+Anim] precedes an NP[-Anim]

Unfortunately, Clark has not included any data in her paper, with the result that it is not possible to re-evaluate her conclusions in any way. She surveys some 30 languages, and while the correlation she claims among orders of various locational constructions is strikingly high, I for one, am not convinced that the explanation in terms of the above two features has been demonstrated. In both Amharic, which is included in her study, and in Hadiyya, alternative orders are possible, and found largely when a marked, or emphatic constituent stands initially (I do not mean topicalised or cleft!); thus, in addition to (3.104) and (3.105) above, the following are possible:

(3.107)

- a. hobb topp'e2 uullanne yookko
 lion Ethiopia land-onne present
 Nom Loc V
 'In Ethiopia, lion is present/there is lion'
- b. k'urt'ume2 ka daajjenne yookko
 fish this river-on present
 Nom Loc V
 'There are fish in this river'
- c. anbassa bã-itiyop'ia allã (existential)
 Nom Loc V
 'Lions are in Ethiopia.'
- d. bãc'ak'a anbassaw nãw (locative)
 Loc Nom Cop
 'The lion is in the bush.'

It may be that Clark wishes to exclude such more marked (intonationally) utterances; but in any case, these serve to urge caution in the postulation of putative universals.

Continuing again with Hadiyya, we also find the following.

(3.108)

- a. ayyaall yoothonnihe?
 Ayyaallo present-QU
 'Is Ayyaallo present?'
- b. ergooge yoo2lo2onnihe
 Ergooge present-QU
 'Is Ergooge present?'

An affirmative answer to either of these would consist of the response yookko/ yoo2lo2o 'he/she is present'. In the negative, the verb bee2e is used, which we may gloss as 'be absent.' Note also that bee2e functions as negative auxiliary in the

subordinate clause. When the spatio-temporal location of a 'presence'-clause coincides with the utterance location (ie. it makes reference to present time), the verb y- is formally inflected with Imperfect suffixes, which carry a strict present-time reading. y- cannot inflect as a Simple Perfect main verb. Here we require setting up SUBCAT: {NP[NOM]}. When the spatio-temporal location of a 'presence'-clause precedes or follows the utterance location, it is expressed suppletively by the verb he2- once more. This is illustrated below:

(3.109)

- a. itt' soodina he2ohonnihe?
 he tomorrow present-QU
 'Will he be present tomorrow?'
- b. itt' beeballa he2ukkonnihe?
 he yesterday present-QU
 'Was he present yesterday?'
- c. ergooge hink ammane he2lamo?
 Ergooge which time present
 'When will Ergooge be present?'

The temporal phrases are optional, and adjunctival here, being added only to ensure the correct temporal restrictions. Again this requires SUBCAT: {NP[NOM]}.

The data on y- 'be present' require extension in one more direction, for it is used in expressing possession. In the following, Pr and Pd stand for possessor and possessed, respectively.

(3.110)

- a. iina soor oos yookko
 to-me four boys present
 Pr Pd V
 'I have four boys'
- b. iina saayy yookko
 to-me cows present
 'I have cows'

SUBCAT this time is {NP[DAT], NP[NOM]}. The possessor is in Dative Case, a fact with which Clark(*op.cit*) agrees, finding in her survey that either Dative or Genitive is commonly found; and both, she says, are widely used in language to mark locative relations also, referring to Hjelmslev(1935), going so far as to claim that they are only used to mark locative nominals (*op.cit*:116). If I have interpreted her correctly, this would simply not be true in Hadiyya, which uses the Dative in a "locational relation" only within this particular construction, elsewhere preferring the Locative Case marker, 2.1.3. Whether there is an ontogenetic relationship between Dative, Locative and Comitative in Hadiyya remains to be demonstrated, although in the case of the two latter it seems almost self evident, and this could conceivably include Dative also, 2.1.3.

Briefly, for comparison, consider the negative of the above, which is formed with bee2e, 'be absent.' Clearly bee2e is going to be subcategorised as y- here.

(3.111)

- iina oos bee2e
 to-me boys absent
 'I have no boys'

Clark claims that her data always require Pr < Pd, whether the verb follows both or intervenes, and she extends her two Discourse Rules to cover the possessive sentence:

(3.112)

Pr	<	Pd
[+Def]		[+Def]
[+Anim]		[-Anim]

Digressing again briefly into Amharic, I want to consider the following.

(3.113)

- a. yĩh sãw mäs'haf allãw
 this man book is-present-him
 Pr Pd V
 'This man has a book'
- b. ĩnnãzzih sãwocc mäs'haf allaccãw
 these men book is-present-them
 'These men have a book'
- c. sãwoccu mäs'hafu allaccãw
 men-def book-def is-present-them
 'The men have the books'

These data are in accord with Clark's finding that Amharic uses the order Pr Pd V in such constructions, but there is a complication. The possessor is the logical subject, and it is in Nominative Case above, but the grammatical subject is the possessed item, 'book'. This can be seen in the fact that (i) in all three examples the personal NP agrees grammatically with the OBJECT Case clitics postposed to the verb, and (ii) in the third example, both nouns are definite, in which case an Accusative NP should carry the object marker -n: clearly neither NP is considered Accusative. Here in short, we have an extraposed NP as possessor, of which Hetzron(1970:307f) says it is "not integrated syntactically into the sentence." See also Dawkins(1960:54), who terms it an "Introductory Nominative."

Again, whether animacy in this way is to be withheld from the possessed item is open to question; but a more serious piece of

counter-evidence might be that her claim that Amharic presents the same (ie. Pr < Pd) order in both of her possessive constructions is simply false. Some data on each is offered in (3.114):

(3.114)

- a. ĩña sost lĩjjocc allãn Poss₁, 'have'
 we three children have-us
 Pr Pd V
 'We have three children'
- b. jĩh lĩjj yāne nāw Poss₂ 'be'
 this child mine is
 Pd Pr Cop
 'This child is mine'
- c. yāne lĩjj jĩh nāw
 my child this is
 'This is my child'

The data in (3.114a) and (3.114b) seem to indicate clearly an order for Poss₂ of Pd < Pr, patterning on the equative clause.

Returning to Hadiyya, this use of y- in the possessive clause is restricted to present-time possession also; when possession is shifted to future or past, he2- is the suppletive root used.

(3.115)

illageen iina lobakat lalleww he2ukko; (PAST)
 before to-me many cows there-was;

kaba ihukkaarem hoff k'at'a yookko. (PRESENT)
 now but little amount there is.

waa2 yukkaare hoff k'at' hiinciins lasage
 God be-SR little amount year-from after

iina lobakat he2ookko. (FUTURE)
 to-me many will-be

'Before, I had many cows; but now I have a few. If God
is in it, after a few years I will have many'

These uses of he2- will be subcategorised as y-, namely, SUBCAT:
{NP[DAT], NP[NOM]}.

Consider finally the example below. Here there is one argument
and the verbal y-, which must then be subcategorised {NP[NOM]}.

(3.116)

itt' yoohonnihe?
'Is he present?'

These various suppletive uses are summarised in (3.117) below.

(3.117)

	copular	be present	live	
	be	/possess		
Past	he2-	he2-	he2-	S.Perf.
Present	Ø ~ -tte	y-	he2-	Impf.
Future	ih-	he2-	he2-	Impf.

In none of these does the verb contribute much semantically; it
largely functions as a peg to hang tense-aspect and person
marking onto. That is, they can be largely regarded as copulas.

The copula -tte is only used when duration is not in focus.
Note also that aspect, as formally marked in the verbal-copulas
cannot be rigorously interpreted, just as with inchoative verbs.

For past time reference all above use he2-.

For future time reference, and in subordinate clauses,

ih- replaces -tte
and elsewhere he2- is used.

3.3. SUMMARY.

In this chapter I have reviewed the structure of the simple verbal sentence, and the nominal clause in Hadiyya, for the latter going beyond what is strictly necessary, to give a broad view of the way suppletion impinges on the nominal clause.

I have also reviewed HPSG, and examined the inter-related issues of configurationality, n-ary unification, grammatical functions, and constituent order. The outcome of this has been to posit n-ary unification, and an acceptance of free constituent order without necessarily entailing configurationality. I proposed several substantive hypotheses, the Single Rule Hypothesis, the Separate Subject Hypothesis (extending Borsleys proposal to a free-order language), and the Unordered Subcat Hypothesis. This last was adopted as a major hypothesis to pursue in the latter chapters of the thesis.

I also criticised the LP operation CONCAT in the phonology attribute, as Pollard & Sag have proposed, re-locating it as the syntactic attribute ORDER. This is still mediated via the LP Principle,

(3.118)

[] < HEAD

ie. every constituent precedes its head.

The system of agreement features was looked at carefully, and a solution to several language-specific issues offered, which bears also on the analysis of the same feature structure in nominals, see Chapter 2.

The question of null-NPs was raised, and a proposal made which recognises the different character of a language like Hadiyya, compared to one like English.

Finally, I wish here to outline an overall goal for the formulation of Hadiyya within HPSG, and that concerns a substantive

simplification of the Rule schema. Compared to GPSG, HPSG to date has drastically reduced to a mere handful the number of rules in a grammar: Head-Complement Rules, Coordinate Rules, and linking rules (the latter for binding gaps, and differing from the other rules only in the addition of a condition to be met).

Stuurman(1985) and Cann(1987) are among those who attempt to reduce to a minimum the PS rule component of an X-bar syntax, with the only rule being

(3.119) $X \rightarrow Y^*$

That is, a mother generates some string of daughter categories in a local tree. The parallelism with the abbreviatory W^* for non-configurational languages is obvious.

Gunji(1987), for Japanese, has rejected a W^* approach, specifically rejecting the rule $X \rightarrow X^* H$, but still suggests that a single phrase structure rule will suffice, namely, the binary rule $M \rightarrow D H$.

Sag & Pollard(1987:5) say "the combinatorial properties of words and phrases are inherent in the words and phrases themselves", and this, if it is true, is a strong justification for seeking to allow the lexical sign to determine what its complement sisters will be -- i.e. that the only PS rule is that in (3.119) above. Indeed they (ibid) use the same argument when they speak favourably of "the elimination of large numbers of specific rules in favour of a small number of highly schematic language-specific constraints on possible local constituent structures."

It is my intention to reduce the HPSG schema to the rule in (3.119). Linking rules can be contained within this, by incorporating their Conditional statement into a declarative format. How this schema applies to the Coordination schema laid out in Chapter 4 will be looked at in that context.

In this way, any lexical head sign can be incorporated via unification into full grammatical strings; also head signs are explicitly drawn from the various possible categories - adjective, relative clause, demonstrative etc. HPSG has not yet dealt with any mechanism for handling this; Cann(op.cit) uses null lexical entries and the concept of "minor head" (introduced for Det only?) to handle the case of attributive categories acting as head, but this is somewhat contrived and inelegant. All we need to ensure is that a potential head is appropriately specified, and I have proposed the feature HFORM = { +, -, PRD }. The Head Feature Principle will pass head specifications between mother and daughter; but in the face of split-headedness, it is not clear how that should best be formulated.

ADDENDUM.

Gunji(1987) is a revision, somewhat in HPSG terms, of a 1981 thesis written in early GPSG format, which earlier work I have not seen.

There is no scope here for a major review, but because his is the only major piece of work in HPSG, of a language other than English (as far as I am aware), because Japanese is generally held to be non-configurational, as I claim Hadiyya is, and because Gunji's thinking is sometimes parallel and sometimes divergent to my own, I want to consider him briefly in this note.

One of the striking similarities is in the decision common to both of us to view SUBCAT as an un-ordered set of complements. On the other side, Gunji firmly insists on a single, binary phrase-structure rule, $M \rightarrow D, H$, rejecting the option of ternary rules, and any schema such as $X' \rightarrow X', H$, although Japanese is often held up as one of the primary exemplars of (some degree of) W^* status.

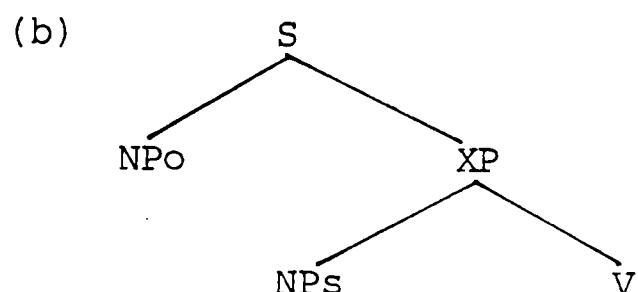
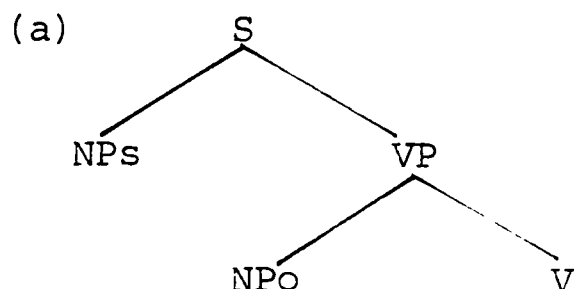
In motivating his position, he argues for the need to recognise a VP constituent, and concomitant special status for the grammatical subject. Arguments for VP constituency are of the familiar sort: substitutability and conjoining argue for categorial identity. One rarely feels such arguments to be logically watertight, and the data in other languages generally proves equally amenable to alternative analyses in the long run, so that I find myself a little disquieted here. His strongest argument perhaps concerns the reflexive formative zibun, to which he devotes a full chapter, although even here, the case is not as clearcut as one might wish.

Indeed, stronger than his motivation of VP constituency, is the tenacity with which he promotes his single, binary PS rule: $X \rightarrow D, H$. It would seem that the fundamental influence towards binary constituency is his desire for a coherent semantics, which he frames as a functional application in intensional model-theoretic terms.

Consider, for example, what he says on p.208: "Note also that a non-configurational analysis inevitably has to assume an additional structure, such as the 'predicate argument structure(PAS)' in Farmer(1980, 1984), to compensate for the poverty of the phrase structure." A coherent semantics is of course a proper goal; whether it is equally proper to insist "we only need phrase structure to explain grammatical facts, both syntactic and semantic." (ibid) is arguable, given the architecture of HPSG. In fact, he virtually avoids exploiting the trimodal HPSG sign, maintaining a position much closer to GPSG and Montagovian work, in which the PS structure defines the semantic combination of functor and argument. That also seems to explain why he criticises the W^* sort of rule, $X' \rightarrow X'^*, H$ as an impoverished phrase structure -- it cannot define semantic application. This seems to deprive the HPSG formalism of some of its potential in handling semantic information flexibly within the phrase structure. At the same time, however, it must be acknowledged that the early HPSG material Gunji was aware of had not yet adopted situation semantics.

Returning to VP constituency, note that Gunji concomitantly pleads what he refers to as "special status" for the grammatical subject, so that for instance, only the subject can control reflexivisation. Recognising SOV order as canonical, or basic in the grammar, he then posits the following structure (a) for the simple sentence.

(3.120)



Later, in Chapter 6, he proposes that "scrambled" orders (his term) are derived directly by the unordered SUBCAT, much as I propose also, but because he holds to a configurational phrase structure, he is then put in the position of positing (b) for OSV clauses. Now, here, a number of points arise: (i) If subject and verb are hereby made a constituent, as they are by his structure, what constituent are they? Gunji does not say, as far as I can see, yet this would be an important categorial distinction. (ii) Nor does he offer any empirical justification in support of this constituency; it is an unsupported outcome of his formalism. Indeed, in a note he explicitly says "a subject and a TVP are usually not considered to be a constituent." (p.86) and in that place suggests that a verbal pro-form, doo-su that can stand for a VP cannot stand for a Subject-Verb constituent. (iii) While it seems right to judge that (b) above will be as computationally tractable as (a), given the PP marking on the various NP complements, he reverses traditional thinking in placing the object higher than the subject in a basic, that is, non-dislocated, or gapped, structure. (iv) A natural corollary is that his semantic combination is somewhat complicated by this.

While rejecting a flat expansion of S, he recalls for us that

"there are several reasons for assuming a VP, at least in the canonical-word-order sentence." (p.208, emphasis mine, RJS). Here I think, he reveals the matter that vitiates his whole claim to configurationality. He has determined VP constituency without reference to non-canonical orders, whereas the real need to argue for a VP constituent stems from the empirical evidence against rigid canonical ordering. By failing to consider VP constituency in the context of word-order freedom, and, at the same time, by failing to establish Subj-Verb possible constituency, I believe Gunji fails to make his point stick.

I will conclude by reference to a different matter. Gunji proposes a syntactic feature, grammatical relation, GR = {SBJ, OBJ}, so setting up subject and object as primitives. His need is justified by reference to the difficulty of identifying these two relations morphologically in the sentence (and of course they cannot be identified positionally). As far as I can see, a reformulation in terms of ordered ROLE values, as I propose, will achieve what he wants, as well as avoiding making these out to be primitives, at the same time coming closer to a predicate-argument ordering, which Dowty among others suggests has a stronger claim to universality.

Otherwise, his work and the present one might be seen as somewhat complementary attempts to explore ordering freedoms within HPSG architecture.

PART II.

In Part II of the thesis, I look at the coordination system of Hadiyya.

Canonical coordination is achieved morphologically, and this is covered in Chapter 4. The canonical schema is contrasted with various other, lexical and particular conjunctive devices, and together this provides a background against which the major mechanisms of predicate conjoining can be compared, in the two final chapters.

The mechanisms for subordinating one sentence to another are Adverbial Clauses, Complementation, including Subjunctive, Infinitival and "complementiser" Clauses. These are covered in Chapter 5.

There are three mechanisms in Hadiyya whereby VPs may be coordinated - the Serial Verb Construction, the Switch Reference Sentence, and the Simultaneous Event Sentence, and these are covered in Chapter 6.

CHAPTER 4.

CANONICAL COORDINATION.

Outline.

4.1. CANONICAL MORPHOLOGICAL CONJUNCTION

- 4.1.1 Nominals
- 4.1.2 Parallel Sentences
- 4.1.3 Subordinate Clauses
- 4.1.4 Coordination of Converbs
- 4.1.5 Formalisation
 - 4.1.5.1 The rule schema
 - 4.1.5.2 Conjoining different categories
 - 4.1.5.3 Resolution rules

4.2. LEXICAL COORDINATION

- 4.2.1 odim 'and'
- 4.2.2 te2im 'or'
 - 4.2.2.1 Non-Verbal Categories
 - 4.2.2.2 Verbal Categories
 - 4.2.2.3 Embedded VP Disjunction
- 4.2.3 ihukkaaremdu 'but'
- 4.2.4 particles

4.3 SUMMARY

In this chapter I will deal with various constructions which come under the name of coordination, broadly construed. In section 4.1 I consider canonical coordination, in which conjuncts are marked by an overt formative which might be glossed 'and', and which are of equivalent syntactic status, so that they can generally be permuted (although not always without semantic effects). 4.1.4 extends this to cover the canonical coordination of converbial forms according to this schema, although the syntax of converbial sentences as such is not discussed until Chapter 6.1, since VP coordination in Hadiyya generally does not fit into the canonical schema. Finally, in 4.1.5 I account for the data formally.

Against this background I contrast free lexical coordination, again broadly construed, to include disjunction, in section 4.2, in which the logical connectors odim, te2im and ihukkaaremdu are briefly considered, as well as the particles -m- and -d-. In this way, the basic coordinative structures found in Hadiyya are considered, and this will provide a background against which to assess the clause chaining, or serialisation discussed in detail in Chapter 6.1.

4.1. Canonical Morphological Conjunction.

4.1.1. Nominals.

Coordination is signalled morphologically by the lengthening of word-final vowels on all coordinate heads. In (4.1a) I have shown this crudely using + to 'tack on' informally the extra vowel mora.

(4.1)

- a. mann arasaa baak'elaa t'aafe2ee wit'ookko
 aras-a+a baak'el-a+a t'aafe2-e+e
 men wheat-& beans-& teff-& he-sows
 'Men sow wheat, beans and teff.' ¹

- b. goonii meentii oosii hundim Hallaapp'isa wocc'amo
 males-& women-& children-& all Alaba they-speak
 'All the men, women and children speak Alaba.' ²

- c. (it') waasa beetinaa landicconaa uwwaakko
 (He) insete-bread to boy-& to girl-& he-gave
 'He gave insete-bread to his son and daughter' ³

1. teff is a cereal peculiar to Ethiopia, spec. eragrostis tef, Shack(1966) and (1974).

2. Alaba is the neighbouring Highland East Cushitic language most closely related to Kambaata. Korhonen et al(1985).

3. waasa is a heavy sour-dough bread, made from flour from insete , spec. insete edule ventriculosis.

- d. an alamayehu iyyann k'ot'iso fuc'isiinsee
 I Alemayu my-father Kotiso Fuciso-ABL-&

iyyumma landaayye anosseensee ... k'aramummo
 my-mother Landaaye Anosso-ABL-& I-was-born
 'I, Alemayu, was born from my father Kotiso Fuciso and
 from my mother Landaaye Anose.' [An Autobiography]

- e. ise sarimmaa fii2immaa iittitamo
 she cooking-& sweeping-& she-likes
 'She likes cooking and sweeping.'

- f. manc gundaa geejjaa
 man short-& fat-&
 'The man (is) short and fat.'

In the examples above, the coordinated heads are glossed '-&'. It will be seen that noun heads in all grammatical Cases -- Absolutive (4.1a), Nominative (4.1b), Dative (4.1c), Ablative (4.1d) -- infinitive deverbals (4.1e), and predicate adjectives (4.1f), all similarly lengthen the final vowel on each conjunct. In (4.1b) the constituent final hundim 'all' of the last conjunct does not lengthen a final vowel; instead it suffixes -m. In this case, the suffix -m or a long ii, hundii, are alternative realisations.

Since all constituents of NP can occur as head (with an appropriate suffix in some cases -- see 2.2.3.), all such conjuncts are permissible, including those with headless relatives. Case marking of all conjuncts must of course be the same, and conjuncts can normally occur in any order.

4.1.2. Parallel Sentences.

The same mechanism can occasionally be found coordinating short parallel sentences:

(4.2)

beetii hoccimma iittookko; landiccoo sarimma iittitamo
 'boy-& hunting he-likes; girl-& cooking likes'
 "The boy likes hunting, and the girl likes cooking."

Here, it is noteworthy that the lengthened vowels occur on the head-words of the coordinated grammatical subjects, which are hardly to be considered the heads of the two respective sentences so coordinated. In addition, there is "comma" intonation on the first clause, resulting in one phonological sentence. Beyond noting such examples, I will do nothing towards attempting a formalisation; for one thing, the constraints (semantic or syntactic) under which they are formed are too little understood.

4.1.3. Subordinate Clauses.

Subordinate clauses can be similarly coordinated. In section 5.1 and Appendix II, it will be seen that subordinate adverbial clauses formally resemble relative clauses with a nominal head, and these heads can undergo classical coordination of the type dealt with here.⁴

(4.3)

a. at k'ot'issoo2isinaa kiinii annann ihamoo
 you strengthen-COMP-DAT-& from-you separate be-3pl

bee2isa maase2loo2isinaa keese uunt'inaammo
 lack-COMP bless-COMP-DAT-& you we-have-prayed

'We have prayed that you strengthen us, and that you
 bless us that we do not become separated from you'

[A Morning Prayer]

Observe here the conjoined Dative complements, and also the

4. It is worth mentioning here, that I have never noted an example of two relative verbs being coordinated by this mechanism, when modifying a nominal head.

embedded purposive clause 'that we do not become separated from you.' The following example shows conjoined reason clauses (and note also the conjoined subject at the beginning).

(4.4)

ki summii ki annoomii bakiissu bikkinaa
your name-& your fatherhood-& give-rest because-&

egeru bikkinaa ...k'int' k'int'aakko galat kiina ihona
watch because-& fold folded praise to-you let-be

'Let there be layer upon layer of praise to you,
because your name and your fatherhood have given
(us) rest and because you have cared (for us).'

[A Morning Prayer]

Example (4.5) shows coordination by the same mechanism, of clauses marked as simultaneous; the verb forms are discussed in 2.3.2.4.1 and their sentential syntax is discussed in Chapter 6.3.

(4.5)

wit' ammane afeebe2e ʃokkiins gatukk hakk'uwwa
sowing time until- from- which- trees
arrives burning survived

mine guguurukkuyyii, guguussiisukkuyyii,
home while-lugging-&, while causing-lugging-&,

t'anu k'at'inne gugumuwwa t'ok'olukkuyy egerookko.
able/3ms/ in-accord tree-stumps while- he-waits/
uprooting continues

'Until seedtime comes, according to his ability, lugging
and causing others to lug off home trees which survived
burning, he uproots tree-stumps, and waits.'

[How a Farmer Works]

Notice here the simple coordination by long final vowels, of the phrase guguurukkuyyii guguussiisukkuyyii, 'lugging off and making others lug off'. The second of the two verbs is a causative, derivationally /guguur-s-s-u-kk-u-yy-ii/.

4.1.4. Coordination of Converbs.

The converb CV₁ can also be coordinated in this way, after cliticisation with the copulative -t, thus:

(4.6)

wodda2 bacaa ʒokkiisu beyyo korcaatii
previous cleared burned place digging-&

korcosaatii wit'ookko
making-dig-& he-sows.

'... having dug, and made others dig the afore-mentioned part which he cleared and burned, he will sow (it with seed).'

[How a Farmer Works]

Note the assimilation of the epenthetic i-vowel of the causative stem to the root vowel o. korcaahii korcosaahii is also possible; presumably deriving either from a masculine copulative form, or being another case of the "intrusive h" noted on p.175. The data in (4.7) give another example of the same.

(4.7)

... farʒimuwwa ... witt'a2la2ahii katta2ahii
sheaves gathering-& tying-&

hegeegonne guguuttamo
homestead-on they-will-lug.

'... gathering and tying ... sheaves, they will lug them off home.'

[How a Farmer Works]

Notable here is the fact that the verb forms are formally 3rd person feminine, used as plural, and here this putative mascul-

ine form ..hii ..hii can occur. Recall that the Hadiyya gender system is greatly degenerate.

Of first importance in such examples, is the observation that, using the mechanism of canonical coordination, two medial verb forms, converbs, are coordinated. That is, rather than the two activities concerned proceeding one after the other, as in the normal expression of two or more converbial forms, see Chapter 6.1, they occur in parallel. In comparing these examples with those in Chapter 6.3, it will be clear however, that in the present case we are not dealing with forms overtly marked as simultaneous by the suffix -uyy: rather that the two coordinated activities are in parallel. It will be made clear in Chapter 6.1, that the chaining of Converb₁ forms (as these are) is subject to a "same-subject" constraint, and this is observed in these coordinated forms also.

4.1.5. Formalisation.

In this section I will put forward a rule schema, later revised into language specific principles, to deal with the above data in 4.1.5.1, briefly consider the problem of the categorial identity of conjuncts in 4.1.5.2, referring in passing to Proudian & Goddeau(1987)'s proposals, and in 4.1.5.3 I will deal at some length with the interesting problem of resolution rules.

4.1.5.1. The Rule Schema.

The analysis of all such examples must address two major questions. First, the analysis of the coordinating formative, and secondly the rule schema(ta) required to generate just those structures required.

There are two approaches worth considering as resolving the nature of the formative: (i) that each conjunct is suffixed by a phonological segment, an unspecified vowel, [+voc, -cons], with all other features, viz., height and frontness, being spread from the preceding vocalic segment. (ii) that the final vowel

on the head of each conjunct adds a further feature, [+long] -- or whatever feature is held to encode long or fortis segments in the phonology.

There is little to choose between these approaches as far as elegance is concerned, and preference is probably theory-bound. That is not to say the decision is in any way trivial, however; a consideration of the processes described in Hoeksema & Janda (1988) make it clear just how problematic it will be to fit an adequate morphological and phonological component to the HPSG sign formalism (and for that matter to any recent model). However, I shall adopt the second, prosodic alternative out of a general preference for a phonological analysis in prosodic terms.

Turning to the rule schema, I adopt as starting point a schema such as that proposed in GKPS(1985:170-173). In Hadiyya there is no need to distinguish binary from iterating coordination, and the following schema (4.8) should suffice.

(4.8) Coordination Schema (CS*)

$$X \text{ ----> } H[CONJ \ a]^*, H[CONJ \ a]$$

where a = [+long], and is abbreviatory
for whatever statement formalises the
requirement that final vowels on each
conjunct head be lengthened

Clearly this is immediately reducible to the simpler schema in (4.9), which is one instantiation of the irreducible PS rule set out as goal in Chapter 3.4.

(4.9) Coordination Schema, revised.

$$X \text{ ---> } H[CONJ \ a]^*$$

We are left with the following questions to resolve. What

categories X are input to this rule? How can a phonological feature be incorporated into a rule schema, and how can it be correctly unified-in? In the coordination of converb forms by this schema, how should the schema specify that each conjunct must have the copula t attached? An answer to the last question will presumably adopt and adapt whatever solution is finally acceptable for attachment of the copula in nominal clauses; see the discussion in Chapter 3.2. Secondly, beyond noting the need for a prosodic phonological component to be developed for the HPSG sign, I have nothing to say on the shape of any proposal.

Turning to the first question, the specific categories which fall under the general schema outlined above might be summarised as follows:

(4.10)

[+long] final vowels:

NP, V[SIM], V[CV₁], V[SUB]

This approximates to the generalisation that the schema (4.9) applies to NP, and to VP[INF], VP[MED] and VP[SUB]. It remains shaky, in that, firstly, there is no evidence that CV₂ forms (ie. those marking switch reference, see chapter 6.2) can coordinate in this way; in the nature of switch reference this might not be an unsurprising restriction, and might be safely set aside. Secondly, concerning the VP[SUB] grouping, I have, unfortunately, no data on the various conditionals, except for a specific use of -da2e, see 4.2.2.3. I assume that, in general, conditionals can coordinate by this means. On the other hand, I am reluctant to assume that subjunctives can coordinate by this means in the absence of specific data on this point.

Bearing in mind these possible restrictions, I suggest that ultimately the constraint in (4.10) can be reduced to NP and (a definable subset of) VP[~FNL]. Clearly, to fit under the schema in (4.9), each conjunct of the form VP[~FNL] must have identical Head feature values; see Chapters 5.2 and 6.1 for data illustrating this for infinitival complements and converb₁ forms

respectively. For these forms, the HFP must be defined in terms of union of head features. Compare 4.1.5.3.1, (4.16), where the HFP is stated in terms of intersection to fit the resolution of AGR conflicts in NP coordination.

4.1.5.2. Conjoining of different Categories.

Proudian & Goddeau(1987) propose that a failed unification be marked as Confl+, to deal with the problems of constraining the coordination of different categories. I would reject this as a general solution, on the grounds that (i) unification is powerful enough without arbitrarily extending its power in this way, (ii) it doesn't really solve the feature value marking on mother and daughter in any case, and (iii) it opens the door to chaos -- this mechanism could get us out of any analytical difficulty.

In Hadiyya, to this point, the question does not arise; certainly different major categories can function as head of NP, see 2.2.3. When they do, they are marked as nominalised, and a variety of such NPs can coordinate according to the above schema. The only occasions in which VPs coordinate by this schema are those noted in the above sections, in which the VPs are all categorially identical. However, disjunction, and other aspects of apparent coordination do offer difficulties, and these are discussed in section 4.2 below, and I will show in Chapter 6 that medial VFORMS present us with additional problems.

4.1.5.3. Resolution Rules.

Perhaps the most basic (if only because it is completely ubiquitous), of the various problems which beset any solution to coordination phenomena concerns the person, number and gender of the mother, for various values of these attributes on the conjunct daughters. The use of the term "resolution rules" in application to such phenomena is attributed to Givon(1970). Vanek(1970) prefers the term "feature computation rules."

Generalising for the moment away from the specific complexities introduced in different languages, the solution to such problems is intuitively simple. It seems to be a universal, for example, (See Moravcsik, 1978) that if any conjunct is 1st person, then the coordinate NP is also regarded as 1st person for matters of verb agreement; if any conjunct is 2nd person, the coordinate NP is regarded as 2nd person. And although not an absolute universal, it is often found that the grammatical number of any coordinate NP is plural, whatever the number of each separate conjunct. A constraint on gender is more language specific, but it often takes the form: 'if any conjunct is gender X, the coordinate NP is gender X'.

Good summaries of the language-specific details are to be found in Moravcsik(1978), and Corbett(1979), but the first only provides a very general overview of a relatively small sample of languages, in the search to identify putative universals, and the latter only goes so far as to provide a number of prose statement "rules", which do cogently specify in detail, however, the range of ways in which conflicting values on different conjunct heads are resolved (or not, as the case may be) on the mother. Corbett & Hayward(1987) and Hayward & Corbett(1988) provide careful descriptions of the details in two East Cushitic languages, Bayso and Afar respectively, and Corbett & Mtenje (1987) does the same for the Bantu language Chichewa. Only Sag et al(1984), and Farkas & Ojeda(1985) so far as I am aware, have made any attempt to formalise the matter, the former within a GPSG framework, but only for English person and number.

In attempting to formalise resolution rules, we want some way of specifying formally such apparent "common-sense" notions like the following.

For person, we want in some way to record that 1st outranks 2nd outranks 3rd person:

(4.11)

- a. $U([PER:1], [PER:x]) = [PER:1]$
- b. $U([PER:2], [PER:\sim 1]) = [PER:2]$
- c. $U([PER:3], [PER:\sim(1 \vee 2)]) = [PER:3]$

For number, the intuitively simple "always plural" outcome requires something like this:

(4.12) either $U([SING], [SING]) = [PLURAL]$
 or $U([NUM:a_1], [NUM:a_2]) = [NUM:PLU]$

That is, the unification of any two or more attribute-values for grammatical number is always NUM:PLU. And for gender,

(4.13)
 $U([GDR:x], [GDR: y]) = [GDR:x]$

Statements such as these require, either on a universal or a language specific basis, that the person, number and gender attributes on a mother carry certain particular values no matter what values are specified on any of two or more head daughters. This is of course, a simplification, not only in terms of the formalisation proffered, but also in terms of the cross-linguistic generalisations to be covered. Although person apparently always follows the above ranking, the other two features are resolved in various ways in different languages; and indeed in some cases the specifications on one conjunct are used, and no resolution takes place. In the following three sub-sections I will deal in turn with each attribute, and consider a formalisation that is applicable to Hadiyya, but capable of extension to the various resolution and non-resolution schema required cross-linguistically.

4.1.5.3.1. Person Resolution.

As noted already, in coordinate NPs, person marking is constrained in such a way that the value of PERSON on the conjoined mother is subject to the universal that a value of PER: 1 on any

conjunct outranks a value PER: 2, which in turn outranks PER: 3. In seeking a notation to capture this, it is important to bear in mind two guidelines. Firstly, the notation must, of course, express the generalisation economically and elegantly. Secondly, if the counsel of GKPS(1985) is to be followed, the linguistic facts ought to be a corollary of the notation, and not a loosely attached stipulation.

It is not immediately obvious how the formalism of any current model of syntax can be applied to make person resolution a corollary. Rather trivially, $1 < 2 < 3$ in number theory, and an attempt could be made to incorporate this into a suitable formalism; for example, that the minimum value marked on any conjunct is selected for the mother value. However, the traditional designations of 1st, 2nd and 3rd person are conventional only, and any parallel with number theory is purely coincidental.

Secondly, person marking might be defined in terms of, say, an animacy hierarchy, as is sometimes postulated in work following Greenberg's approach to language universals. A major conceptual difficulty here is that to assign greater animacy to 1st over 2nd person is somewhat arbitrary, and generally untrue. A solution in terms of some notion of "salience" begs the question: in what does differing salience reside?

In a third attempt, the ranking constraint might be approached from the perspective of the pragmatics of human discourse. Discourse among humans seems universally to perceive a major distinction among interlocutors and other parties, and a ranking might be supposed to exist as follows: speaker > hearer > other party. A bundle of metaphysical properties can be supposed to underlie this, including self-hood, group identity, animacy etc, but however any human community "tears the universe along its seams", all apparently tear it in such a way as to define 'thee' and 'me.' And when any Other might be perceived to be joined with me, I very plausibly include myself as part of the larger group, whether that Other is my interlocutor or a third party

proper. I suggest that this piece of homespun philosophy, or some near kin, is what underlies the universal person ranking constraint encoded in human language.

Sag et al(1984) have suggested a formalisation of the constraint that lends itself well to this suggestion. They assign features to the traditional person categories as follows:

(4.14)

1st	{ }	
2nd	{XSP}	ie. a value <u>e</u> Xcluding <u>S</u> peaker
3rd	{XSP, THP}	ie. a value <u>T</u> Hird <u>P</u> erson

In line with my suggestion that there is a discourse assignment of interlocutors and others, I suggest revising this slightly, to the two features XSP and XAD, the latter notating 'except addressee.' This leads to the assignments

(4.15)

1st	{ }
2nd	{XSP}
3rd	{XSP, XAD}

Sag et al(op.cit, p.12) also employ a widely accepted revision of the GPSG Head Feature Convention(HFC) such that the set of head feature values of a mother is the intersection of the head feature specifications of all the head daughters. This needs to be altered, so that it is restricted to the intersection of AGR, rather than HEAD features, formally

(4.16)

$$C_0 \upharpoonright \text{AGR} = \bigcap_{1 \leq i \leq n} C_i \upharpoonright \text{AGR}$$

where C_i is a categorial head

This, rather than a formulation in terms of the union of all conjunct features, leads to the following in coordinate phrases.

(4.17)

person of conjuncts			person of coordinate phrase		
-----			-----		
1st & 1st	\cap	{ } , { }	=	{ }	
2nd	\cap	{ } , {XSP}	=	{ }	1st
3rd	\cap	{ } , {XSP,XAD}	=	{ }	
2nd 3rd	\cap	{XSP}, {XSP,XAD}	=	{XSP}	2nd
3rd 3rd	\cap	{XSP,XAD}, {XSP,XAD}	=	{XSP,XAD}	3rd

This achieves exactly the outcome desired, and it does so in such a way that results are a corollary of the formalism. Specifically, it operates by defining feature-values for person in a particular way, and it thus provides a lexical solution.

In a short excursus, note that some languages, including other Cushitic ones (Somali, for example, see Saeed, 1984), grammaticise an inclusive/exclusive distinction in first person plural. This is not a distinction in the category of person per se, but it rather encodes some such feature as {inclusive, exclusive} or {proximal, distal}, which is value for some other HEAD or AGR attribute, and so does not affect the above proposal.

Nevertheless, two criticisms must be faced. First, how is the solution applied to data in which person resolution is not operative? I will return to this in 4.1.5.3.4. Secondly, in view of criticisms of a parallel attempt to handle number and gender resolution made in the two following sub-sections, is this solution to person resolution still acceptable? First, we must look at these other attempts.

4.1.5.3.2. Number Resolution.

In Hadiyya, as in English, the general case requires that a coordinate NP is marked as plural, whatever the number of its individual conjuncts. While this is not an absolutely universal finding cross-linguistically, it provides a useful starting point. The generalisation intuitively seems close to basic number theory, in that collections of individual items may be

additively enumerable, and grammaticalised into two broad categories, the unitary and the many, or more traditionally, singular and plural.

Sag et al(op.cit, p.31f) offer a similar solution, in which NUMBER takes the singulary value SING, and leads to the following resolution in coordinate phrases.

(4.18)			number of
	conj ₁	conj ₂	coordinate
	-----		-----
	n {SING}	{ }	= { }
	n { }	{SING}	= { }
	n { }	{ }	= { }
	n {SING}	{SING}	= {SING}

This leads to the outcome in which the coordinate mother is interpreted as plural, except when both conjuncts are singular. This exception is utilised to predict the differing results from the disjunction vs coordination of NPs in English, in which the head of disjuncts is singular (for example, in 'Either Harriet or Rae comes, or I won't'). In addition an FCR states "all N²[CONJ and]'s must be unspecified for [SING]." (op.cit, p.32). In fact, this FCR ensures the desired outcome across the board without the assignment of values already given, which greatly detracts from the appeal of the solution.

A second, and perhaps more serious criticism can be made. It is well known that a small number of languages grammaticise a dual number category in addition to singular and plural, and for the solution of Sag et al(op.cit) to be more than an ad hoc, language-specific notation, it must be capable of extension to cover these. (4.19) attempts to sketch out this extension for a hypothetical language which marks dual. Also, recall that Cushitic languages typically include an unmarked indefinite or collective form of the noun, in morphological opposition to singular and plural, see 2.1.2. If these are distinguished

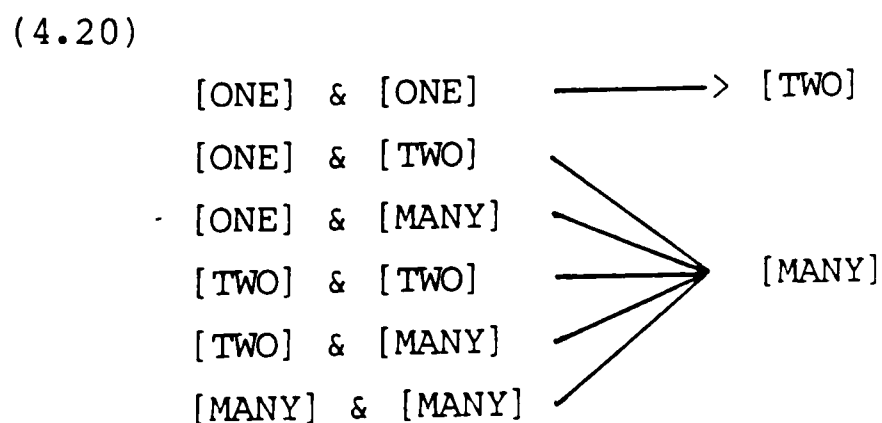
featurally, the proposal of Sag et al(op.cit) is similarly more complicated.

(4.19)

number of conjuncts			number of coordinate	
-----			-----	
plu	& plu	$\cap \{ \} , \{ \}$	=	$\{ \} = \text{PLU}$
dual	& plu	$\cap \{D\} , \{ \}$	=	$\{ \} = \text{PLU}$
dual	& dual	$\cap \{D\} , \{D\}$	=	$\{D\} * \text{PLU}$
sing	& plu	$\cap \{1\} , \{ \}$	=	$\{ \} = \text{PLU}$
sing	& dual	$\cap \{1\} , \{D\}$	=	$\{ \} = \text{PLU}$
sing	& sing	$\cap \{1\} , \{1\}$	=	$\{1\} * \text{DUAL}$

It should be obvious that, whatever the specification of features-values adopted, the coordination of two dual conjuncts can never lead to an intersection which is the empty set, but will always result in an intersection with the feature-value of dual. Similarly the coordination of two singular conjuncts can never lead to an intersection whose membership is that of a dual, but will always result in an intersection with the feature-value of singular. Thus the exceptional nature of the coordination of multiple [SING] conjuncts noted in Sag et al's solution is exacerbated here. To patch things over with an FCR designed to ensure the correct outcome for two [SING] conjuncts and multiple [DUAL] conjuncts must be a last resort. It seems that any solution in terms of set intersection must always fail in this respect.

And yet, I stress again how intuitively simple a solution seems:



This of course, is simplified for the majority of languages which do not grammaticise a dual-number category, in which case all conjunctions in the above are to be mapped into [MANY].

An alternative approach⁵ might be made by defining the necessary constraints in a declarative principle or FCR, but this weakens the extent to which the formalism leads to resolution as a corollary, and the approach is not, of course, lexically based. (4.21) attempts to provide the necessary constraint, without stating whether AGR is a syntactic or semantic feature.

(4.21)

$$\begin{bmatrix} \text{AGR} | \text{NUM: PLU} \\ \text{HD-DTRS: []}^* \end{bmatrix}$$

As suggested already, this is a less than satisfying solution.

4.1.5.3.3. Gender Resolution.

As I noted already in 4.1.5, a constraint on gender often takes the form: 'if any conjunct is gender X, the coordinate NP is gender X'. This is rather a gross generalisation, the detail being far more complex across languages. Corbett(1983:186ff) for example, justifies the simple restatement for some languages, including French, 'if no conjunct is of gender X, the coordinate NP is gender Y'.

If gender is construed to include the phenomenon of noun class, as it appears for example in Bantu languages, the picture is complicated further by the postulation of perhaps sixteen or eighteen genders, in singular/plural pairs.

Nevertheless, I will first restrict myself to the situation in

5. A further approach might be made through defining relations on sets, but I will not pursue this here. It would involve defining an operation F_N on the set N , with membership {sg, du, pl} such that (s,s) maps onto du and any other combination onto pl.

which there are just masculine and feminine genders, as in Hadiyya. Broadly, the above rough generalisations can be summarised as follows: if a number of conjuncts are of different genders, X, Y, the mother node has the gender value X. That is, there tends to be a default gender, which is applied in such cases. Thus, in (4.22), when all conjuncts are gender {A}, so is their mother; when all are gender {B}, so is their mother; and when conjuncts are of different genders, their mother selects one of these.

(4.22)	gender of
gender of conjuncts	coordinate
-----	-----
\cap {A} , {A}	= {A}
\cap {A} , {B}	= {A}
\cap {B} , {B}	= {B}

Sag et al(op.cit) do not discuss gender, but their approach can be simply applied. Suppose that the attribute GDR has the singulary value FEMinine, its absence implying masculine gender. The intersection of conjuncts will provide the following schema.

(4.23)	gender of
gender of conjuncts	coordinate
-----	-----
\cap {FEM} , {FEM}	= {FEM}
\cap {FEM} , { }	= { }
\cap { } , { }	= { }

That is, mixed-gender conjuncts default to masculine. Clearly this can be rewritten to work the other way, so that feminine is default. That a coordinate phrase of mixed gender is always to be specified MASC must now be stated as a (language-specific) principle which operates in association with the Coordination Schema. The formalism applies in an obvious way to a number of languages.

(4.24) Masculine Gender Default

$$X \rightarrow H[GDR:MASC]^*, H[GDR:FEM]^*$$

In declarative format this might be formulated (recall that its substance is covered by an FCR, 2.1.4.1.3).

(4.25) Masculine Gender Default

$$\left[\begin{array}{l} AGR|GDR: MASC \\ DTRS: [HD-DTR|AGR|GDR: FEM]^* \\ \quad [HD-DTR|AGR|GDR: MASC]^* \end{array} \right]$$

Already in 2.1.4.1 and 3.1.2.5 however, I have anticipated a solution along these lines for Hadiyya, and rejected it in favour of one which is descriptively more adequate, and even, I suggest, diachronically explanatory. That solution requires that both genders be specifiable in nominal signs, and that plurals denoting humans specify either the empty set $\{\}$ or a disjunction $\{MASC \vee FEM\}$. This disallows a solution like (4.23) in preference to one like (4.26), instanced for Hadiyya in (4.27).

(4.26) gender of

gender of conjuncts		coordinate
-----		-----
$\cap \{MASC\}$	, $\{MASC\}$	= $\{MASC\}$
$\cap \{MASC\}$	, $\{FEM\}$	= $\{MASC\}$
$\cap \{FEM\}$	, $\{FEM\}$	= $\{FEM\}$

(4.27)

mancoo beetoo	$\cap \{M\} \& \{M\}$	=	$\{M\}$
'man and boy'			
menticcoo landiccoo	$\cap \{F\} \& \{F\}$	=	$\{F\}$
'woman and girl'			
mancoo meenticcoo	$\cap \{M\} \& \{F\}$	=	$\{M\}$
'man and woman'			
mannaa meentaa	$\cap \{M \vee F\} \& \{M \vee F\}$	=	$\{M \vee F\}$
'men and women'			

Previous analyses have tried to handle these matters within the rule schemata of the model, for example, Proudian & Goddeau (1987) suggest redefining unification to allow it to take place under certain conflicting conditions. The parochiality of number and gender resolution might be taken as evidence that these matters ought to be handled by principles, rather than by the lexical solution proposed by Sag et al, or the Draconian change proposed by Proudian and Goddeau.

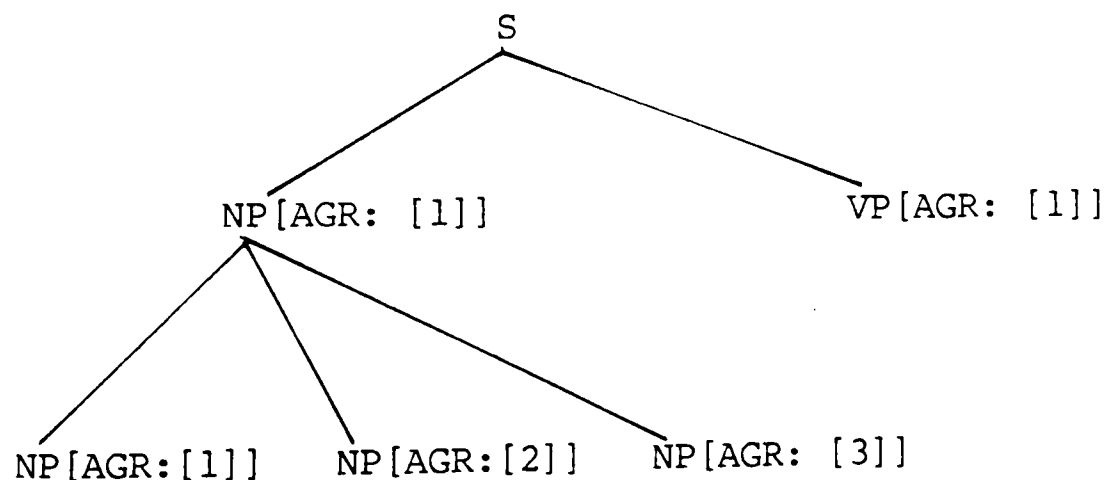
4.1.5.3.4. An Excursis.

I want to take time here for a broader look at some of the language specific alternative approaches to resolution.

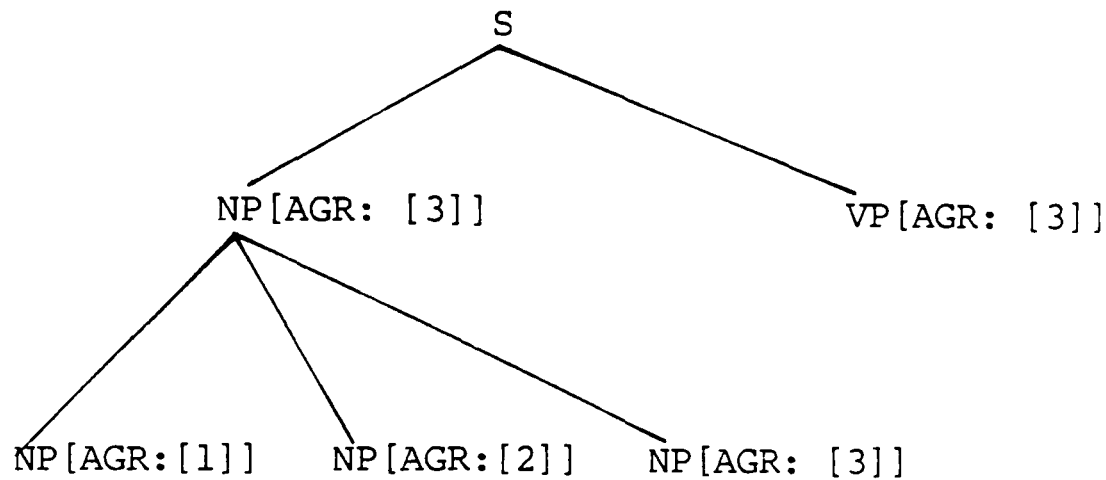
First, there is the situation in which agreement features are not resolved, but those of a particular conjunct are passed to the mother, it may be those of the first conjunct, or of the nearest conjunct to the agreement target. These are expressed in the following schemata.

(4.28)

a. first conjunct marking.



b. nearest conjunct marking.



It is difficult to propose a general solution in the absence of language-specific constraints regarding configurationality, but if the coordinate NP is itself expanded in a way that privileges the first or last conjunct, it should be possible to frame a principle ensuring the proper feature-sharing, (4.29); a consideration of configuration, headedness, or precedence constraints might provide alternative solutions.

(4.29)

a. first conjunct marking

$X[AGR:[1]] \rightarrow H[CONJ, AGR:[1]], H[CONJ]^*$

b. last conjunct marking

$X[AGR:[3]] \rightarrow H[CONJ]^*, H[CONJ, AGR:[3]]$

As a second point, consider how the outline in the previous sub-section applies to languages in which the genders are masculine, feminine and neuter. Once again it is not possible to do more than sketch the bones of an approach, without dealing in specific constraints, but the following general schema is offered.

(4.30)

gender of conjuncts		gender of coordinate
-----		-----
\cap {MASC} , {MASC}	=	{MASC}
\cap ,, {FEM}	=	{ }
\cap ,, {NEUT}	=	{ }
\cap {FEM} , {FEM}	=	{FEM}
\cap ,, {NEUT}	=	{ }
\cap {NEUT} , {NEUT}	=	{NEUT}

As it stands, this gives the empty set, ie. unspecified gender, for all mixed-gender conjunction. This would be amenable to instantiating the desired specification in a language-specific principle, for example, "all mixed-gender conjunction specifies 'neuter' on the mother node." At least the approach shows promise of application to such situations.

Finally, consider Noun Class languages, such as Bantu. Let us assume first that Class is a gender matter, and marked numerically, 1, 2, 3, etc. The literature reports certain restrictions on the coordination of N-Class conjuncts, which vary from language to language. One rather frequent constraint seems to be that conjuncts from classes with human referents can coordinate, even if they do not belong to the same gender class. A second frequent constraint is that human and inanimate entities do not coordinate in a natural way.

The first generalisation seems to require that N-Class be differentiated from gender proper, and that it is marked in the lexicon. Concord within the NP is a result of sharing this feature among modifiers, following the approach outlined in Chapter 1, while a corresponding AGR feature is a referential matter and specifies natural gender. If this is so, then a head feature SYN|LOC|HEAD|CLASS will be differentiated from a parameter of variation, say SEM|CONT|IND|VAR:GENDER, which specifies referentially derived information. CLASS ensures syntactic concord, and GENDER restricts coordination of N-Classes. If this is correct, then the HPSG sign, with

syntactic and semantic attributes is peculiarly able to achieve what is wanted.

4.2. Lexical Coordination.

I will provide a brief descriptive sketch here of several lexical constituents which in some sense are coordinative items, in order to provide a little further background on this aspect of Hadiyya grammar. This will be useful for contrast with the schema in the previous sections of this chapter, and for assessing the status of the clause chain, or serialisation construction, in Chapter 6.1. I will not pursue a formalisation.

4.2.1. odim, 'and'

Consider the following examples drawn from text, as typical.

(4.31)

biteeseena hasukk manc k'uumu buyyinne karaa,
for-selling wants person limp leaf-with tying

meera massaa biteesookko. odim, iteenam hasukkok
market taking he-will-sell. Also, for-eating who-wants

enjuwwa edaa at'isaa saraa itookko.
spices adding preparing cooking he-will-eat.

'The person who wants to sell (it) will bind it up in a
limp leaf, take it to market and sell (it). Also, he
who wants to eat (it) will add spices, prepare and cook
it and eat.'

['Making Curd-cheese']

(4.32)

ee beyyonne yookk timhirt guullaa lasagenne,
that place-LOC wh-is teaching completing after-LOC

odim "Indira" yakkam beyyonne soor kifilanne
also Indira called place-LOC four room-LOC

uwwamoo losano losummo
given lesson I-learned

'After completing the teaching there is in that place,
I also learned lessons in Grade 4 at the place called
Indira.' [An Autobiography]

Clearly odim is not simply a logical-& connector conjoining into a single constituent categories of equal status.

4.2.2. te2im, 'or'

4.2.2.1. Non-Verbal Categories.

Here there are two constructions:

- a. each disjunct head is preceeded by te2/te2im 'or'.⁶
- b. te2im occurs preceding the final disjunct head, and all preceeding ones undergo final-vowel lengthening.

6. The final -m is indubitably the constituent-final coordinating particle; the preceding vowel, i, is epenthetic, and the lexical entry of the formative is presumably te2e, although it does not seems to occur syntactically in this form.

For example:

(4.33)

- a. hakiinc kaballaa soodoo te2im insoodo waarookko
 doctor today-& tomor.-& or day-after- he-comes
 tomorrow
- b. hakiinc te2im kaballa te2im soodo
 doctor or today or tomorrow

te2im insoodo waarookko
 or day-after- he-comes
 tomorrow

'The doctor will come either today, or tomorrow, or the day after.'

(4.34)

- te2 manc te2im meenticco te2im beet adunco ʕookko
 or man or woman or boy cat he-kills
 'Either the man, or the woman or the boy will
 kill the cat.'

Note in (4.34) the lack of coordinating particle -m on the first (sentence-initial) occurrence of the disjunction here. This sentence initial usage is used colloquially, but is of marginal acceptability, and in literary materials is preferably omitted.

Disjunction of modifiers can occur within the NP.

(4.35)

- a. jor te2im erookka mat luwwa
 bad or which-is- one thing
 good
 'One thing, which is good or bad.'

- b. mat er luwwa te2im baat'iilo
 one good thing or sin
 'One good thing or sinful.'

(4.35b) is probably just as easily understood as disjunctive NP-or-NP, but note that mat 'one' has scope over both heads.

4.2.2.2. Verbal Categories.

Disjunction can be encoded in the same way as NPs.

(4.36)

- faraš te2im t'issaakko te2im lehaakko
 horse or he-sickened or he-died
 'The horse either got sick or died.'

Not surprisingly, the question form is more common in normal discourse.

(4.37)

- a. laaroollannih zamaroolla?
 is-he-shouting he-is-singing?
 'Is he shouting or singing?'
- b. diinat jabbukkonnii lehukko?
 animal is-he-ill he-died?
 'Has the animal sickened or died?'

First, note that the verbs in (4.37) are Present Continuous, and in (4.37b) are Simple Perfect; that is, both verbs are finite forms. Secondly, in the formative suffixed to the first verb, -nnih or -nnii would seem to be phonetically alternating forms, in which the final systematic segment /h/ may undergo progressive lenition until only its length remains, and all other features copy those of the preceding close front vowel.

The interesting feature of this construction is the unusual clefting, viz., that it is the first disjunct that carries the

question marker -nnih rather than the following, sentence final disjunct. This is a little unexpected in a strongly V-final language like Hadiyya, in which the polar question marker comes sentence finally, suffixed to the final verb.

Indeed, a true cleft-sentence question is also possible.

(4.38)

- a. lehaahinnii foorinne he2aa?
 is-he-dead in-life he-remains?
 CV₁-H-CONJ NP[LOC] CV₁
 'Is he dead or alive?'
- b. yoothonnii te2im lehaatte?
 is-he-present or he-is-dead
 V[SUB]-CONJ CV₁-COP
 'Is he alive or dead?'

In (4.38), both (a) and (b), the h between the converb, lehaa and yoo respectively, and the question marker -nnii appears to be intrusive; no other explanation is plausible, and intrusive h occurs in several Vforms. In (a) he2aa is the simple converb, and in (b) the converb lehaa is suffixed by the copula, -tte. It is the explicit te2im that forces the copula onto the following disjunct head, in this case.

I only know of these structures occurring with two disjuncts, and if this is a correct constraint, an explicitly binary-head schema is required.

(4.39)

Binary Coordination Schema (CS²)
 $X[+V] \rightarrow H[CONJ a_1], H[CONJ a_2]$
 where $a_1 = [-nnih]$
 $a_2 \in \{ \langle NIL, NIL \rangle, \langle te2im, -tte \rangle \}$
 and $X[+V]$ is any verbal category.

The crucial point to note in these data, is that the two con-

junct heads are not featurally identical. This means that the binary schema cannot be reduced to the ultimate $X \rightarrow Y^*$, or the specific instantiations are captured in a language-specific principle which unifies with the rule schema $X \rightarrow Y^*$ to output the desired categorially non-identical binary conjunction.

4.2.2.3. Embedded VP Disjunction.

Consider lastly the following example.

(4.40)

Laap'is waaroda2e waaroyda2e la2ummoyyo
 Laapiso if-he-came if-he-came-not I-know-not
 'I don't know whether or not Laapiso came.'

Note that in Hadiyya there is no verb deletion. Again note the need for a binary head schema. Thus:

(4.41)

Binary Coordination Schema (CS^2)

$X \rightarrow H[CONJ a_1], H[CONJ a_2]$
 [+V]
 [SUB]

where $a_1 = [-da2e]$

$a_2 = \langle NEG, -da2e \rangle$

and X is here specified as a subordinate
 verb form.

Because of the requirement that one conjunct must be affirmative and the other negative, this is subject to the same difficulty vis-a-vis the schema $X \rightarrow Y^*$.

4.2.3. ihukkaaremdu, 'but'.

There is no simple phrasal or clausal marker; only the sentential ihukkaaremdu. This is a complex form /ih-u-kk-aa-re-m-d-u/ based on the verb root ih- 'become', marked as 3ms Simple

Perfect (-u-kk), and carrying switch reference marking (-aa-re), the particles -m and -d, and final -u, apparently topicalising in some way. This form stands sentence initial.

(4.42)

ee aa2akko2 birinne, lobakat bira ihulas,
that received money much money if-it-is,

fellakkiccoo gereccoo adiccoo labeenaa antabaa2iccoo
goat-& sheep-& calf-& bullock-& hen-&

gancoo eddeccaa aa2akkamo. ihukkaarem lobakat bira
mare-& clothing-& one-receives. But much money

aa2akko2 beelas, kaniins hanaan t'igamukk luwwa
receive if-not this-ABL above being-counted things

hundam aa2akkeena t'anakkamoyyo.
all to-receive you-are-not-able.

'With the money one receives, if it is much money, one will get a goat, sheep, calf, bullock, hen, mare and clothing. But if it is not much money, one is not able to get all things which are counted above.'

[About Hadiyya-country Fields]

I have not yet uncovered any specific restrictions in the two propositions which are contrasted by this means, but once more, it is clear that we are not dealing here with coordination into a single-constituent.⁷

7. There is also the adversative bagaan, which occurs in a restricted syntactic environment, sharply contrasting two propositions. It occurs sentence medially, between the two propositions, and cannot be a candidate for treatment in a coordination schema of any kind.

4.2.4. Particles.

Here I briefly treat two Hadiyya particles, -m and -d-.

In 4.1.2, I illustrated how the subjects of two parallel sentences can be coordinated by the canonical mechanism. The example is repeated here for ease:

(4.43)

beetii hoccimma iittookko; landiccoo sarimma iittitamo
 boy-& hunting he-likes; girl-& cooking likes
 'The boy likes hunting, and the girl likes cooking.'

If this structure is resolved into two phonological sentences, sentence-final falling intonation occurs on the first verb, there are no long vowels, and a coordinative particle -m is suffixed to the grammatical subject of the second sentence.

(4.44)

losisaanc losisookko; losaanim lossamo
 teacher teaches; students-& learn
 'The teacher teaches, and the students learn.'

This suffix -m occurs constituent finally, and implies &-conjunction with (a constituent in) the previous sentence. In isolated sentences, the inference that it is a constituent in a parallel grammatical slot, is generally drawn.

Very rarely, this latter mechanism, with the particle -m, can conjoin two final verbs, as in the following example with the words siitt'ookko ... siitt'ookkome.

(4.45)

... minee, abbaayyuwwaa, aayyuwwaa, amaa, oosoo, uullaa
 t'ibb k'int'ite siitt'ookko, waaroo dollenne, her herina
 he'o hecca siitt'ookkome.

'... he will gain houses, brothers, sisters, mother,
 children, and land a hundred times, and he will gain
 in the coming age, the life of the ages.'

[Gospel of Mark 10:30].

No schema/rule has been elucidated yet for handling this coordination of two main verbs with -me, nor for the simpler related case in which the final conjunct of a coordinate NP is cliticised with the particle -m instead of undergoing vowel-lengthening. This latter complication can be resolved by resorting to a coordination schema like (4.8), roughly $X \rightarrow H[CONJ a_1], H[CONJ a_2]$, in which $a_2 \in \{ [+long], -me \}$. The same fundamental solution is required for the conjoining of main verbs, but is complicated by the need to specify

$$\left[\begin{array}{l} \text{SYN|LOC|HEAD: [MAJ: V} \\ \text{[VFORM: FNL]} \end{array} \right] \text{ on each conjunct, and further}$$
 specify the shape of the particle within a_1 . The clitic will carry a final vowel when attached to a verbal head, and otherwise no vowel.

However, a comparison with the data concerning hund- in 2.2.3, and the cross-sentential use as in (4.44) above, shows that the full story is likely to be more complex. It seems unlikely that -m should be covered by a coordination schema.

4.3. SUMMARY.

Canonical coordination, as it occurs in Hadiyya, can be readily fitted into a phrase structure schema whose only rule is $X \rightarrow Y^*$. I have attempted in this chapter to describe this aspect of Hadiyya grammar, and to provide a natural schematisation for its production or parsing by rule, including a consideration of resolution rules for person, number and gender. Based on the work of Sag et al(1984), I have offered an approach to person

resolution in which the formalism itself seems to capture the universal generalisation. In the case of number and gender, I have set up language specific principles in a formalism whose more extensive usefulness into other languages I have briefly pursued.

Against the background of section 4.2 of this chapter, the canonical schema for coordination stands out clearly. Two syntactic environments were noted in which the unary form of the coordination schema cannot be fitted without difficulty, and indeed can only be adhered to if the specific facts are framed in a language-specific principle, which unifies with the above rule schema. The problem is an instance of the celebrated difficulty of coordinating non-identical categories, which in Hadiyya requires that one conjunct differs in some specified feature from the other conjunct(s).

CHAPTER 5.

SUBORDINATE VP AND S.

Outline.

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5.3. SUMMARY.

In this chapter I will look at the two VP subordinating mechanisms of adverbialisation in 5.1, and complementation in 5.2, and suggest formalisations of these. Apart from its intrinsic value, the chapter provides a necessary background against which the claims of Chapter 6 can be better evaluated.

5.1. ADVERBIAL CLAUSES.

5.1.1. Introduction

Within human languages predicates can be subordinated to another head in at least three ways, Thompson & Longacre(1985):

1. to function as an NP argument of a verb:
(complementation)
2. to modify a noun: (relative clauses)
3. to modify another verb phrase: (adverbial clauses)

In this part of the chapter I will be concerned primarily with the last of these functions, but in passing I will make brief mention of the structure of the relative clause.

In Hadiyya, although I will not illustrate this, any NP constituent can be relativised, including the complement of a comparative. In the relative clause, the appropriate head-word is phrase-final, and immediately preceded by the Relative verb in subordinate form, specifically, a form drawn from the subordinate Perfect or Imperfect paradigms. Relevant for what follows is the fact that a temporal adjunct can be relativised, to form an adverbial clause ... being an adjunct, it does not create a gap in the relative sentence. In Appendix II, I outline a structural analysis for relatives.

As I have stated, a major purpose is to investigate the subordination system prior to the claim which will be made in Chapter 6.1, that the serialisation of converbial forms does not fit under subordination. Descriptive detail is therefore fairly extensive, while, on the other hand, formalisation is pursued only to the degree held to be necessary for showing how I propose handling adverbial adjuncts.

Pollard & Sag(1987) put forward an outline proposal, noting the comparative neglect of adjuncts in theoretical treatments, and I will take that up in 5.1.5. But first, in 5.1.2 I will consider

temporal adverbial clauses, in 5.1.3 causal adverbials, and in 5.1.4 -(h)ane nominalised forms.

5.1.2. Temporal Relationships.

I deal here with the adverbial relationships of time - before, at, and after event X in 5.1.2.1, and then in 5.1.2.2 with the relationships until, and without/before.

5.1.2.1. Before, After, When.

These three adverbial clauses are headed by nouns in Absolutive Case, and are structurally parallel to relative clauses, except that they are formed on an adjunct position rather than a complement. Thompson & Longacre(1985) note that temporal adverbial clauses can generally be substituted for a single word, are generally paraphrasable as relative clauses (.. at the time that X..) and so frequently take a form similar to that of relative clauses. However, in both the anterior-time and posterior-time adverbial clauses, the VForm of the subordinate verb is tightly constrained.

5.1.2.1.1. Anterior time: 'before.'

In the anterior time clause, the noun head is marked with Adessive Case, or occasionally simply Absolutive, and the verb has VForm SJ₁. The following examples are from text.

(5.1)

- a. ka ammanenne neese galatt'ineena illageenim
this time-on we praise-1pl-SJ₁ before-AD-&

at galatt'antaattohane

. you praise-PAS-2sg-DUR

'Even before we praise you, you have been getting
praised.' [A Morning Prayer]

b. t'een ga2neena illageen baccukkaanonne
rain beat-3ms-SJ₁ before-AD what-is-cleared

Šokkaa uwwookko
burn-3ms-MED give-3ms-IMP

'Before it rains, he will burn up what is on the cleared
part.' [How a Farmer Works]

c. mann ... lobakat k'orooma losoo2n illage
people much wisdom learning before

uulla abuullakkamisa la2am he2ukkoyyo.
land cultivate-COMP knowing they-were-not

'Before the people learned much skill they didn't know
how to cultivate the land.'

[Agriculture in Hadiyya-land]

Observe that although SJ₁ is used here in (5.1a) and (5.1b), there is a different subject in both clauses. Similarly, in (5.1c), SJ₂ is used although the subject is the same in both clauses, although in 5.2.2 it will become clear that the subjunctive verb forms normally entail a different constraint on subject co-reference. The fact that the subjunctive is subordinated to another head, illage is apparently responsible for this, forcing an irrealis reading without constraining subject reference. In fact, there is no constraint on subject coreference. Use of the Adessive Case lays emphasis on the separation of the two events in time, whereas the Absolutive allows an interpretation of closely contiguous events. The time of the subordinate event is relative to that of the embedding clause. The constraint in verb form, namely, the co-occurrence of SJ₁ forms with the head in Adessive Case is not found in relative clauses.

An anterior temporal relationship can also be expressed in an SVC (see Chapter 6.1) using gaass- 'precede', thus:

(5.2)

šowa mareena gaassaa i bat'o
 A.A. go-lms-SJ₁ precede-lms-MED my work

guulloommo

I-will-complete

'Before I go to Addis Abeba, I will finish my work'

5.1.2.1.2. Posterior time: 'After.'

Here the noun head is generally Case marked with Absolutive, and the VForm is often CV₁, but may also be Imperfect. As noted in chapter 6.1 a string of CV₁ necessarily displays chronological ordering; adverbialisation of one event to be anterior to another meets the same constraint, hence the CV₁, with its implication of a perfective, is a "natural choice" here. Again, the examples are from text.

(5.3)

a. itt'im siggaa wo2ooma t'uut'aa lasage, k'ure2enne
 he-& cooling water-ANA sucking after, pot-on

hoff wokkicom eddakka2a giiranne kaasakkamo
 little water-DIM adding fire-on set-3res-IMP

'And after it has cooled and absorbed the water, one
 will add just a drop of water in the pot and set it on
 the fire.' [How to Make Bu Mucho]

b. ookkim mat k'at'a buuzalaa lasage, k'app'akka2a
 that-& one amount cooking after, slowly

hamaaransakkamo
 stir-3res-IMP

'And after that has been well cooked for some time,
 one will slowly stir it around' [ibid]

c. ee-hid ihaa li2aa lasage ^Ysaate2enne fissakka2a
 like-that become cooking after dish-on put-out

 buuro edakka2a hamaaransakka2a itakkamo
 butter adding stirring eat-3res-IMP

'In that way, after cooking, one will put it out on
 a dish, add butter, stir and eat it' [ibid]

Observe again, that there is no subject coreference restriction across the two clauses. The SVC provides an alternative expression of this temporal relationship without subordinating one event to another; see chapter 6.1.

5.1.2.1.3. Contemporary time: 'When.'

Of the three relationships discussed in this chapter, the expression of same-time by an adverbial clause is perhaps the one most like the relative construction, in that it occurs with both Simple Perfect and Imperfect. The head word is ammane 'time', generally in Absolutive but it can also appear in Locative Case, and the VForm can be either the Imperfect or Perfect subordinate form. Neither SJ₁ nor CV₁ can occur here.

(5.4)

a. gala2oom iibboo ammane, ee illaansamu bu2o ee
 griddle-ANA be-hot time, that sifted buo that

 iibbu gala2anne issakka2a haankurakkamo
 heated griddle-on doing stir-3res-IMP

'When that clay griddle is hot, one will put that sifted
 insete-meal on that heated griddle and stir it'

[How to Make Bu Mucho]

b. ookkim haankuramaa li2oo ammane,
that-& stir-PAS-MED cook-IMP time

šaate2enne toconne fissakka2a wo2o c'ecc'efakka2a
dish-on side-on putting-out water moistening

ifiisakka2a dissakkamo
covering put-down-IMP

'And, it having been stirred, when it is cooked, putting
it in a dish at the side, one will moisten it with
water, cover and put it aside' [How to Make Bu Mucho]

c. oo wo2im huffoo ammane, danaamis šuffaa2akka2a
that water-& heated time, well chopped

murakko2 k'ak'ul šaana ee huff wo2onne edakkamo
cut raw cabbage that hot water-on add-3res-
IMP

'And when that water is hot, one will add to that hot
water, finely shredded raw cabbage'
[How to Make Bu Mucho]

d. hafacc hafaccu ammane, hundam at'uransaa mucc'ussookko
wind blow-SP time, all winnow purify-3ms-
IMP

'When the wind blows, he winnows it all clean'
[How a Farmer Works]

e. ... k'amacc dabaru ammanenne hobbic k'uuk'aakka
 monkey replying time-LOC lion angering

"itt'o amadoommo" yaakka barenne t'opp'-aa
 "him I-will-seize" saying hole-on jumping

iik'amaa lehaa t'a2ukko
 break-PAS dying he-was-done-for

'At the time when the monkey replied ... the lion got
 angry, and saying "I'll get him" jumped on him, and he
 being broken, died and was finished off'

[Judgement of the Animals]

It is apparent in the use of Imperfect vs Perfect verb forms in the adverbials, that aspect plays an important role in the Hadiyya verbal system. (5.4d) in particular, employs a perfect in the adverbial and an imperfect in the matrix clause. Use of the imperfect occurs when the adverbialised event is durative in nature, whereas the perfect suggests the completed nature of the event: in (5.4d), hafaccu ammane presents the blowing as a complete, simplex happening; in the previous examples, the cooking or heating are presented as complex, durative processes.

When-clauses are negated by including bee2e 'be absent' following the subordinate verb form.

(5.5)

massukk bee2 ammane ...
 take-SP absent time
 'when he didn't take ...'

Posterior-time clauses cannot be negated; since 'after' marks event₂ as following the adverbialised event₁, in which case event₁ is not so likely to be a non-event. The situation in which event₂ occurs following event₁'s failure to occur, we might reasonably expect to be realised by paraphrasis (after X failed to occur, Y), or by a VForm not directly related to the

affirmative statement. Conceptually, anterior-time clauses are not straightforward candidates for negativisation either, with similar reasons; but see 5.1.2.2 on -2n forms.

5.1.2.2. Without/before, and Until.

I suggested in 2.3.2.4.3 that the forms concerned are morphological negatives derived from the two subjunctive stems, SJ₁ and SJ₂. Consider the following example.

(5.6)

- a. an ka maarage maatirik fatana massoo2n uroommoyyo
 I this year Matric exam take-w/out I-leave-NEG
 'This year I will not quit without taking the matric
 examination' ie. I will certainly take it.

- b. at ee mat'aafa mine massitoo2n waatto2 bee2isa
 you that book home take-w/out come absent-COMP
 'Don't come without taking the book home'

Note the form of the mitigated command in (b), using a complement form, literally, 'that you don't come ...'

Tense-aspect is relative to that of the final verb, and the form is, I suggest, an irrealis negative, whose discourse function is in part to convey what Grimes(1975) terms "collateral information".

The following additional examples are from text, and show there is no subject restriction across the two clauses.

(5.7)

- a. neese hansoo2nim at hassaa siiddaattohane
 we want-1p-NEG you want-2s seek-2s-PP-DUR
 'Before/without our wanting (you), you wanted
 and sought (us)' [A Morning Prayer]

- b. itt'uwvim hobbicco baddito2 bikkina, ma'luccom
 they-& lion fearing because, nothing

dabattoo2nim mett'o2 saayyicco amatt'ita2a itt'uw
 answer-NEG-m single cow taking their

ann mine matto2o
 father's house they-went

'And because they feared the lion, without answering
 him, they took their single cow and went to their
 father's house'

[How a Lion and Nine Hyena Cubs Went Hunting]

- c. ee lasage meenticco lakk'oo2nim sas gamaan
 that after woman knowing-NEG three thieves

mine aagamaakko orodonne maat'amamukko
 house entered sheep-pen hid-PAS-SP-3ms

'After that, without the woman knowing, the three
 thieves hid themselves in the sheep-pen by which
 they have entered the house' [God's Horn & the Poor]

The sense of "until Y" is realised periphrastically in Hadiyya, by use of a dependent VForm in -ee, presumably a truncated form of the subjunctive SJ₁, and followed by the verb bee2e 'be absent/lack' as head. Literally then, the form is "lacking X-ing..."¹

1. But there is no phonological stress on bee2e, rather on the previous syllable, and the formative may even be simply be2e ... then what is it? Is it a cliticised form of bee2e, as seems most likely? With this in mind, I have here hyphenated it to

(5.8)

a. tasaas agan afee-bee2e wonnanninne abuullookko
 December month reach-lack hoe-with he-cultivates
 'Until December comes, he'll break the ground with
 digging sticks' [How a Farmer Works]

b. hagay t'een daba2lee-bee2e ...
 Rainy-season rain returns-lack
 'Until the wet season rain returns ...'
 [How a Farmer Works]

c. wo2 huffee-bee2e ifiisakkamo
 water boils-lack cover-3res
 'Until the water boils, one covers it'
 [How to Make Porridge]

A more periphrastic form adds afee-bee2e, giving a repetitive
 'lacking X-ing, lacking reaching' or 'lacking reaching X-ing'.

(5.9)

hakk' worii gibisee-bee2e afee-bee2e
 wood from-in store-lack reach-lack

k'ott'aa ege2lookko
 carefully he-keeps
 'Until he takes it from the forest to the store he
 watches it carefully' [How a Farmer Works]

Once again there is no subject restriction, and tense-aspect is
 provided by the main verb.

5.1.3. Causal Relationships.

In 5.1.3.1 and 5.1.3.2 I deal with Reason and Purpose/Result
 respectively, and follow this in 5.1.3.3 with a very brief
 account of the various conditional formatives in Hadiyya.

5.1.3.1. Reason

bikke 'side' can occur as the head of an adjunct phrase whose complement is an NP in genitival (adnominal) relationship. In examples like the following, this adjunct and an NP complement of the verb of the clause are inferred to be in a contrastive relationship, so that we might gloss the construction rather freely as 'instead of'.

(5.10)

- a. ama2naan giršimm bikke mazmura zamarukko
 believers ceilidh side hymns sing-3ms-SP
 'Instead of traditional sing-ins, believers sing hymns'
- b. at' bikke k'uunka itimm erane
 milk side egg eating is good
 'Instead of milk, eating eggs is good'
- c. maa2l bikke gite2e itimm awaadookko
 meat side peas eating is-useful
 'Eating peas instead of meat is useful'
- d. *t'ee2n bikke eelliinc erane
 'Sun instead of rain is good'

The two nominals, in adjunct and complement, of which the latter replaces the former for some use, must be culturally logical substitutions. For example, to a Hadiyya, sun and rain serve different functions, and cannot occur for semantic reasons in this construction, (5.10d).

Secondly, bikkina 'to the side', the dative Case of bikke, has the sense of 'for the sake of' when postposed to an NP. There is no other NP to which this phrase forms an inferrable contrast.

(5.11)

- a. iyyann bikkina
 my-father to-side
 'for the sake of my father'

- b. t'umm bikkina
 peace to-side
 'for the sake of peace'

Postposed to a clause, as head, bikkina serves to encode reasons. Once again, as with the temporal adverbial clause, this construction is structurally similar to the relative clause.

(5.12)

- a. oo goog huušansoo bikkina,
 that road confusing to-the-side,

t'ab ee lob googoom amaddehe
 straight that big road-ANA hold-PL

- 'Because that road is confusing, keep straight on the
 big road' [Directions to the Post Office]

- b. ijaaj mangist kollinne uwwamu bikkina,
 command government side-COM give-PAS to-the-side,

anim angecc'a woreda maraa lam hiinco ee beyyonne
 I-& Angecha district go-MED two years that place-on

higisummo

I-passed

- 'Because a command was given through the government,
 I went to Angecha district and spent two years in that
 place' [from an Autobiography]

c. odim, Ṣawwanne tommoo sas kifila losona
also A.A.-on ten-& three grade learn-SJ₂

weeṢakko₂ bikkina, Ṣawwanne ... losummo
they-called to-the-side A.A.-on I learned
'Also, because they invited (me) to study 13th Grade in
Addis Abeba, ... I studied ... in Addis Abeba.
[from an Autobiography]

I have attempted in this section to show the commonality of these various usages, as a preferable analysis to one which over-differentiates functions or forms. The differences, I assert, have more to do with the inferences drawn in different syntactic contexts than with semantic differences inherent in the form of bikke.

5.1.3.2. Purpose and Result.

The formative -s-a² in Hadiyya is used as (i) an NP suffix of comparison which can be glossed 'like/as'; (ii) a complementiser 'that/as'; and (iii) a conjunction marking result and purpose. Bresnan(1979) has noted frequent cross-linguistic parallelism of formatives showing this same variety of usage. While I propose that we are in fact dealing with a single formative having a variety of uses, I have resorted to a split description, in which the use of -s-a as a complementiser will be explored below, in 5.2.4, while in this present section I will deal with its use as a logical connector.

But first, consider its use as a nominal suffix.

2. Note my interpretation of various formatives as bare consonantal suffixes here, with the close-front vowel being epenthetic in nature in such suffixes. See 2.1.3 on Case.

(5.13)

ee2isam	'like that' (anaphoric connector)
ki2isa	'as you'
wo2isa	'as water'
danaamisa	'nicely' (lit: as nice)

It also appears in titles, which take the form of subordinate clauses, or Case-marked NPs, in which it acts as a kind of quasi-nominaliser:

(5.14)

so2 ink'alo gudisakkamisa
 barley roast prepare-COMP
 'That one prepares parched barley grain'

The following data from text in (5.15) illustrates the use of -s-a to mark immediate result, or incipient realisation. It should be clear that in no case is -s-a marking a complement of the following verb.

(5.15)

a. hurbaat' murat beeddukkisam ... ganookko
 crop cutting complete-3ms-SP-CONJ-& he-will-beat
 'And as the harvesting finishes, ... he will thresh
 (it)' [How a Farmer Works]

b. biiranne fittittisam ሄsawwii
 outside come-out-2sg-SP-CONJ-& from Addis Ababa

makiin waaroo googo affootto
 vehicle wh-comes road you'll-reach

'And as you come out, you'll reach the road which
 -comes from Addis Ababa.' ["Directions to Post Office"]

c. posta mine affeena ikkittisam k'abele2e sasik
 Post Office reaching as-you-are Qebele Three

s'iifit' mine yoo2isa mo2isoo beyy yookko
 Admin Office is-present-COMP wh-shows place is

'As you are reaching the Post Office, there is the
 place which shows the Qebele Three Administrative
 Office is there.'

The nominalising side of the function of -s-a can be seen in the way in which such a clause can be treated as a nominal stem, and further suffixed -- for example by the singulative -cc-o, in this case contributing a diminutive force to the utterance, which is interpretable in terms of heightened immediacy. Thus:

(5.16)

ka beyyii fittittisiccom, u2lumanne
 that place-from come-out-2s-SP-CONJ-SGV-&, gate-on

woroonimii aadii massoo goog yookko
 down-& up-& takes road is-present

'And just as you come out from there, at the gate there
 is a road which goes up and down'

[Directions to Post Office]

These examples illustrate the use of -s-a to mark immediate result, including the case when this is a projected result relative to the point in time of the discourse. Contrast the following sentences.

(5.17)

wit'u hurbaata moocc bi2isoo bee2isa,
 sown crop wild-animals spoil lack-CONJ

wit' woronne godo2o bat'ookko
 sown within shelter he-will-build

'So that wild animals will not spoil the crop sowed, he
 will build a shelter within the sown area'

[How a Farmer Works]

Here it is clear that the subordinate clause endorses a purpose reading. The nominal nature of the head of this purpose clause is once more apparent in noting that it can be optionally Case-marked as a dative, with -s-n-a, as in the following examples. (5.18a) encodes purpose; for comparison, (b) is a complement clause.

(5.18)

a. ki minenne k'ot'inaa he2noommisina,
 your house strongly live-lp-IMP-CONJ-DAT,

at hara2me
 you help

'In order that we may live well in your house, help (us)'
 [A Morning Prayer]

b. uubamukk beyy hundiinsem ki2issoo2isina
 wh-they-fell place from-every raise-2sg-COMP-DAT

keese uuntinaammo
 you we-have-pled

'We have beseeched you that you raise them from every
 place where they fell.' [A Morning Prayer]

Here again, is evidence of a single formative endorsing a variety of interpretations, which are to be drawn by inference,

rather than construed as part of the inherent lexical content of the formatives concerned.

5.1.3.3. Conditionals.

Hadiyya has a variety of formatives which can encode a protasis conditional statement, namely -las, -aa2leens, -ta2n, and -da2e,³ and which interact with other forms in the verbal system to provide a range of nuances.

5.1.3.3.1. -da2e.

This form has a range of uses; it is used for example, in titles and in complement-questions, as in (5.19) and (5.20) respectively.

(5.19)

- a. bu2 mucco2o hinkid sarakkamda2e
 bu mucho how cook-3r-IMP-CONJ
 'How to Cook Bu Mucho'
- b. salalo hinkid gudisakkamda2e
 curd-cheese how prepare-3r-IMP-CONJ
 'How to Prepare Curd-Cheese'

3. The morphology of these is outwith my concern here; I hope to cover it in a morphology of Hadiyya under preparation. Since I have elsewhere asserted in print that -da2e is a complex form derived from -d-a2e (see Sim 1988), and since in 2.3.2.4.3 I paralleled -ta2n with the negative formative -2n, implying a derivation from -ta-2n, I draw attention to these two points in this note. -aa2leens similarly would appear to be derived from a complex source, reminiscent as it is of the Ablative.

- c. mat abuullaanc hinkid bat'ooda2e
 one farmer how work-3ms-IMP-CONJ
 'How a Farmer Works'

These are all titles of written texts. The examples below illustrate its use in complement questions.

(5.20)

- a. mat abuullaanc hinkid bat'ooda2e
 one farmer how work-3ms-IMP-CONJ

 hoffotam kuroommo
 small-COP-& I-will-tell
 'I will tell a little how a farmer works'

- b. boobicco beeballa maruda2e
 Bobicho yesterday go-3ms-SP-COMP

 t'ummoro t'a2maammo
 Tumoro I-have asked

 'I have asked Tumoro whether he went to Bobicho
 yesterday'

When it is suffixed to the head of a subordinate clause, it may perhaps best be considered to be a complementiser.

5.1.3.3.2. -ta2n.

This is used to express protases which presuppose that their negation is the more likely.

(5.21)

- a. ʼeek-keeno ititta2n t'issitootto
 those eat-2s-SP-CONJ you'll get sick
 'If you eat those, you'll-get-sick'

- b. eekka itittā2n k'ott'itootto
 that eat-2s-SP-CONJ you'll-be-strong
 'If you eat that you'll be strong'

These would both be used when the addressee is predisposed not to eat whatever is on offer. The following indicates the speaker's predisposition not to eat.

(5.22)

- eekka itummtā2n t'issoommo?
 that eat-1s-CONJ I'll-be-sick
 'If I eat that will I get sick?'

5.1.3.3.3. -las and -aa2leens.

These two formatives are apparently close synonyms; indeed I have found no way of distinguishing them by means of differing implications or nuances.

(5.23)

- a. eek-keeno { itittā2leens t'issitootto
 } itittlas
 those if-you-eat you'll-get-sick
- b. eekka { itittā2leens k'ott'itootto
 } itittlas
 those if-you-eat you'll-get-strong
- c. eekka { itummaa2leens t'issoommo
 } itummlas
 those if-I-eat I'll-get-sick

These all permit a predisposition to eat, or at least are open to that possibility, and express warning, doubt or suspicion; the exact connotation derives from the lexical content of the apodosis.

5.1.4. Subordinated -(h)ane Forms.

The function of -(h)ane as a substantive suffix in an equative clause is dealt with in 2.3.1.3 and 2.3.3, and there also I dealt with its use in the formation of Continuous VForms.

Here in this section I will discuss the further derivation of these V[DUR] forms within the Case system. But first, the examples below illustrate how -(h)ane Nforms are Case-marked.

(5.24)

iihaaniins	/ii-han-iins/ 'from mine'
	ls-NZR-ABL
lobaaniins	/lob-han-iins/ 'from the big one'
	big-NZR-ABL
massukkaanik	/mass-ukk-han-ik/ 'the one who took'
	take-3ms-SP-NZR-PTV (partitive)

Observe first, that a process of V-lengthening is operative, such that -(h)ane ---> -(h)aan-. This occurs whenever -(h)ane is followed by another suffix, in general a Case-marker or other postpositional form. Information based theories of linguistic knowledge, in which the cumulative nature of syntactic, semantic and phonological partial information is recognised and progressively overlaid by the process of unification, are in principle well-suited to incorporation of this kind of phonological detail, but the question of how this is to be achieved is as yet unanswered, as I have noted also in Chapter 4.

VForm [DUR] can likewise be Case-marked, as can be seen below.

(5.25)

massukkaanina	[DAT]	'for his taking..'
massukkaaniins	[ABL]	'from his taking..'
massukkaanonne	[LOC]	'on his taking..'
massukkaanda2e	[COMP:da2e]	'whether he takes'
massukkaanisa	[COMP:sa]	'that he takes'

Sentence examples follow.

(5.26)

- a. meera marummaanina iininne k'uuk'akko2ookko
 market go-1s-SP-NZR-DAT me-with they-bec.-angry
 'They are angry with me for my going to market'

- b. abeb itt' diinate masukkaaniins
 Abebe his money take-3s-SP- NZR -ABL

kaballa sat' balla
 today third day

'Today is the third day since Abebe took his money'

- c. itt' lehukkaanonne meenticco mata yito2o
 he die-3s-SP-NZR-LOC woman one she-said
 'On his dying his wife was alone'

- d. itt'uwu neese bant'ummaanisa batt'eena
 they we work-1p-SP-NZR-COMP work-3f-SJ₁

yakkitamulla
 they-try-DUR

'They are trying to work as we worked'

- e. ku makiina an beeballa marummaanda2e?
 this vehicle I yesterday go-1s-SP-NZR-COMP
 'Is it this car in which I went yesterday?'

At least some of these forms, for example, -aan-ina and

-aan-iins, are ambiguous. Compare the readings in (5.27) with those in (5.26) above, which contain formally identical -aan- forms.

(5.27)

a. ka mu2uta ni mine massukkaanina uwwummo
 this goods our house take-3sSP- NZR -DAT I-gave
 'I gave these goods to the one who took them to our
 house'

b. googonne egettaa meera massukkaaniins
 road-on watching market take-3s-SP- NZR -ABL

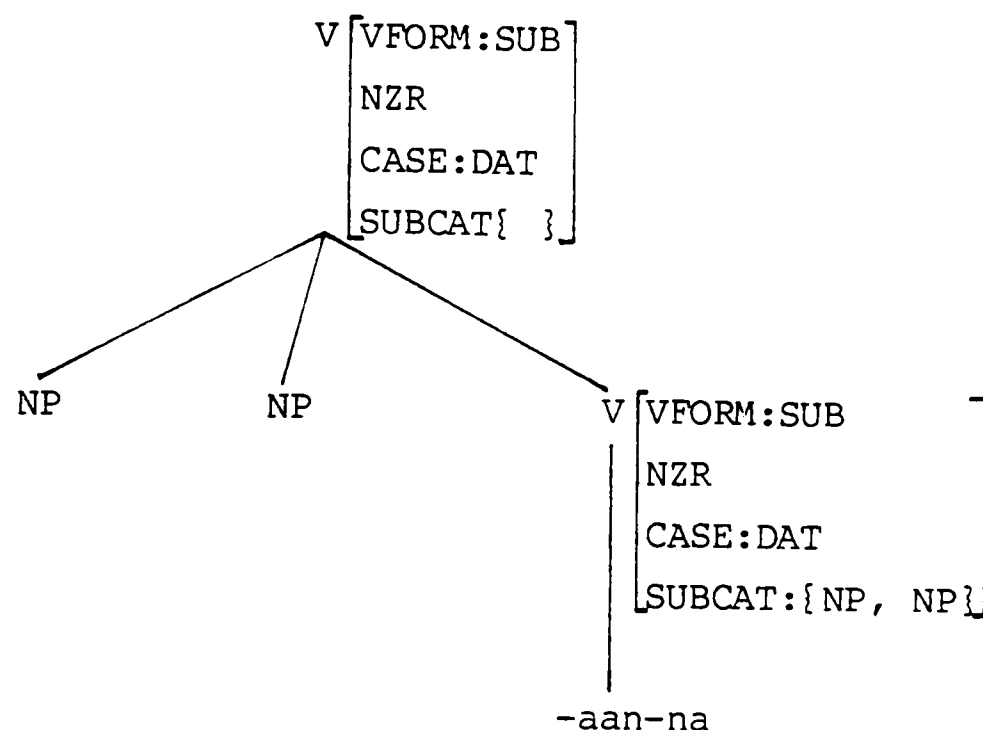
muza bitaa2ummo
 bananas I-bought

'I watched the road and bought bananas from those who
 took them to market'

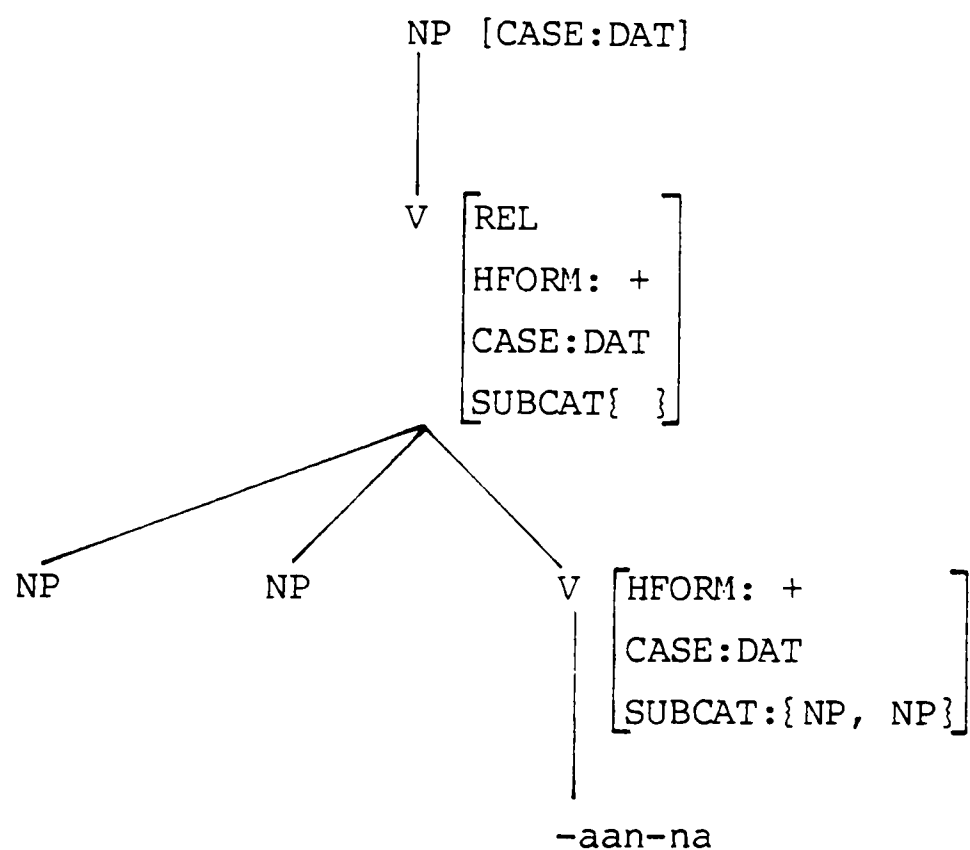
c. an i mu2uta keese massukkaanonne asse2ummo
 I my goods you take-3s-SP- NZR -LOC I-sent
 'I sent my goods on/with the one who took you'

Whether the two readings derive from two different morphological derivations, from semantics, or pragmatics is not clear. In the first examples, (5.26), the -aan- form plausibly is a VP head of a subordinate clause, with Case-marking on the -(h)ane substantiviser; in the second set, (5.27), the -aan- form is plausibly a so-called headless relative, ie. an NP whose head is derived from a verbal form, which suffixes -(h)ane rather than -kk, see 2.2.3, in order to carry oblique Case-marking.

(5.28)



(5.29)



5.1.5. Formalisation.

Adverbial clauses, of whatever kind, are most readily accounted for via an [ADJUNCT] attribute in the head-verb feature structure. Pollard & Sag(1987:157-168), noting the degree of neglect of adjunctive constituents in theoretical studies, discuss a number of problems to be resolved in setting out any general approach to the syntax of adjuncts. I will adopt the

general framework of the outline they propose in the following section. Recall also, that I have already referred to adjunct unification in 3.2.1.2.

In particular, I assume that it is the head that selects for its adjunct, rather than the other way round, and will assume a head feature ADJUNCT, by this ensuring that its requirements apply both to lexical signs and their phrasal projections. I will therefore assume here that all verb and noun signs can carry the category-valued feature ADJUNCTS, thus:

(5.30)

$$\left[\text{SYN} | \text{LOC} | \text{HEAD:} \left[\begin{array}{l} \text{MAJ: N } \vee \text{ V} \\ \text{ADJUNCTS: } \{ \text{A} \} \end{array} \right] \right]$$

ADJUNCTS is a category-valued feature, although I am not able at the present time to articulate co-occurrence constraints between the head and the adjunctival categories which it can select. In the absence of any more constrained statement, I use the symbol A to stand for a suitable sign to function as head of an adjunct. Because of the inheritance mechanism of types in the lexicon, (5.30) can be typed to an appropriate structure, to be inherited, say, by all verb and noun forms, and need not be fully specified on every sign.

Note that the Adjunct constituent A could be a simple NP (tomorrow, today) or a sentence S-bar, -s-a, or, as here, an adverbial clause (which in fact turns out to be NP also). In particular examples, I will generally be as specific as possible.

I will also adopt an Adjunct Principle, simply formulated as (5.31).

(5.31)

$$\left[\begin{array}{l} \text{HEAD-DTR} | \text{SYN} | \text{LOC} | \text{HEAD} | \text{ADJ: [1]} \\ \text{ADJ-DTR: [1]} \end{array} \right]$$

That is, there is a sign which has as daughters its own head and some category that can function as head of an adjunct. The intent of this is to specify a constituent that has a head daughter and an adjunct daughter whose syntax value is the same as that specified on the head daughter. The Principle then licenses the unification of a sign specifying the information in (5.30) with a suitable adjunct-category sign. This is undoubtedly too little constrained, permitting as it does, that any sign can function as adjunct to any other sign. However, stating a Principle in this way does allow us to adhere to the single PS rule $X \rightarrow Y^*$, although as formulated, the principle only permits binary unification. Although ordering of adverbials in Hadiyya is little understood, intuitively there does seem to be a greater constraint, perhaps the semantic one defining scope of one adverbial over another; I speculate that adverbial scope is parallel to linear precedence. Finally, note that, unlike categories listed in SUBCAT, those within ADJUNCTS do not cancel in unification; this is seen in the principle in (5.31) in the lack of a mother specification having an empty ADJ value. Non-cancellation allows iterative adjuncts, although in a fuller treatment, that too requires constraining.

With this brief introduction, I will look at the details of how the mechanism operates in several examples, in the following sub-sections. Interest will be focused on the syntax of adjunct unification, and very little will be said about the semantics. Indeed, I shall say nothing about the semantics of the adjunct constituent itself, and only very roughly shape out that between the sentential head and its adverbial.

5.1.5.1. A Temporal Adverbial.

Consider first,

(5.32)

gala2oom iibboo ammane, bu2o dissakkamo
griddle hot when buo you-will-put-down.
'When the griddle is hot, put the buo⁴ on it.'

The obvious way to treat this is as an NP, with ammane its head, and gala2oom iibboo as a relative clause. Less plausible would be to treat it as a clause, with iibboo as head, specified as V[SUB] and ammane as a post-verbal constituent. Since there is strong evidence that Hadiyya abides by head-final syntax, this latter alternative would require that we ignore this ordering constraint, and the structural parallel of adverbial clause to relative clause. Lexical items such as ammane might then be considered to not only belong to the category Noun, but also the category Conjunction. Even if this disjunction were not insisted on, LP constraints for the language would need to be more complex, to allow for Adverbial clauses with postposed constituents as conjunctions.

However, once again, the nux of the problem is that the head of such structures cannot be uniquely and uncontroversially defined, and clearly the verbal word and its following temporal noun are mutually constraining, and together contribute necessary head information to the mother. This can be seen most clearly in 5.1.2.1, in adverbials encoding anterior time. Whether that information is inevitably contributed by two separate lexical signs, or whether it can be accounted for on one sign, specified within ADJ: A, for example, is open to demonstration, as is the question of how the mutually constraining information is to be unified, and retained in the phrasal projection. Even accepting a weakening of the HFP to refer to intersection of Head features, rather than their identity [see the formulation following Sag et al, 1984) in (4.18)], it will still prove here to be too strong. At this time, I cannot see how it might be redefined to

4. buo is flour made from the dried pith of the insete.

correctly specify which head features pass between mother and daughter in cases of split headedness.

If split-headedness is insisted upon, then some form of the coordination schema might be followed, in which ADJ ---> H[V[SUB]], H[N]. As noted, it still remains to be clarified whether each partial head mutually selects for the other -- which seems redundant -- or not; and how the HEAD feature and the HFP is to be formulated.

I will pursue for now, the simpler first approach, in which the final word is head. Now, a partial feature structure for the final verb would be (5.33).

(5.33)

PHON:	dissakkamo														
SYN:	<table> <tr> <td>HEAD:</td><td>MAJ:V</td></tr> <tr> <td></td><td>VFORM: FNL</td></tr> <tr> <td></td><td>T-A: IMPF</td></tr> <tr> <td></td><td>ADJUNCT: {NP}</td></tr> <tr> <td>AGR:</td><td>PER: 3</td></tr> <tr> <td>SUBCAT:</td><td>{NP_[2]}</td></tr> <tr> <td>LEX:</td><td>+</td></tr> </table>	HEAD:	MAJ:V		VFORM: FNL		T-A: IMPF		ADJUNCT: {NP}	AGR:	PER: 3	SUBCAT:	{NP _[2] }	LEX:	+
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Recall that this form has been explained in chapter 2, and in 3.1.2.5 as requiring an unspecified subject, and there is therefore no NP cross-indexed to ROLE₁; NP_[2] is the unspecified Absolutive object.

Turning attention to the adverbial constituent, the three lexical signs required are as follows in (5.34), (5.35) and (5.36).

(5.34)

[	PHON: gala2oom]
	SYN: [	HEAD: MAJ: N
		CASE: NOM
		LEX: +
	SEM|CONT|AGR: [	PER: 3
		NUM: SG
]]

I am ignoring here all questions of morphology: the lexical entry is gala2a 'fired clay' in Absolutive Case, and the specific form gala2ooma(ABS) carries emphatic and anaphoric force.

(5.35)

[	PHON: iibboo]
	SYN: HEAD: [	MAJ: V
		VFORM: SUB
		T-A: IMPF
	AGR: [1] [	PER: 3
		NUM: SG
	SUBCAT:) NP [	NOM
		SEM|CONT:[2] IND|VAR|AGR: [1]
)
	LEX: +	
	SEM|CONT: [	REL: heat
		ROLE ₁ : [2]
]]

I incorporate here my earlier proposal from 3.1.2.5 that a verbal sign specify SYN|LOC|AGR, and cross-index that to the subcategorised subject value for SEM|IND|VAR|AGR.

(5.36)

[	PHON: ammane]
	SYN|LOC: [	HEAD: [
		MAJ: N
		ADJ: {V[SUB]}
		LEX: +
	SEM|CONT: time]
]

The feature structure for ammane specifies an adjunct which is a

subordinate clause, namely V[SUB]. I make the assumption, which I consider plausible, that precedence relations are bounded within the constituent. This generally ensures contiguity, and requires that dislocation be the result of topicalisation, or some other particular mechanism.

The unification of these signs presents no particular problems.

So much for the syntactic attribute, what of the semantics? (5.37) gives first of all a fuller sign for the main, or final verb.

(5.37)

PHON:	dissakkamo																											
SYN:	<table> <tr> <td>HEAD:</td> <td> <table> <tr> <td>MAJ:</td> <td>V</td> </tr> <tr> <td>VFORM:</td> <td>FNL</td> </tr> <tr> <td>T-A:</td> <td>IMPF</td> </tr> </table> </td> </tr> </table>	HEAD:	<table> <tr> <td>MAJ:</td> <td>V</td> </tr> <tr> <td>VFORM:</td> <td>FNL</td> </tr> <tr> <td>T-A:</td> <td>IMPF</td> </tr> </table>	MAJ:	V	VFORM:	FNL	T-A:	IMPF																			
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What we want to say here is that the temporal relation between the event of the adjunct and the event of the main clause is either same, before, or after. This is achieved in principle here by cross-indexing LOC values in the sign and its adjunct.

The semantics of the adjunct itself is going to be a function of that of the relative clause, an indexical within the verb's semantics, and of the noun ammame. This is uncharted territory, and I have no details to offer, being content for now to explicate the syntactic unifying in of the adjunct.

5.1.5.2. A Causal Adverbial.

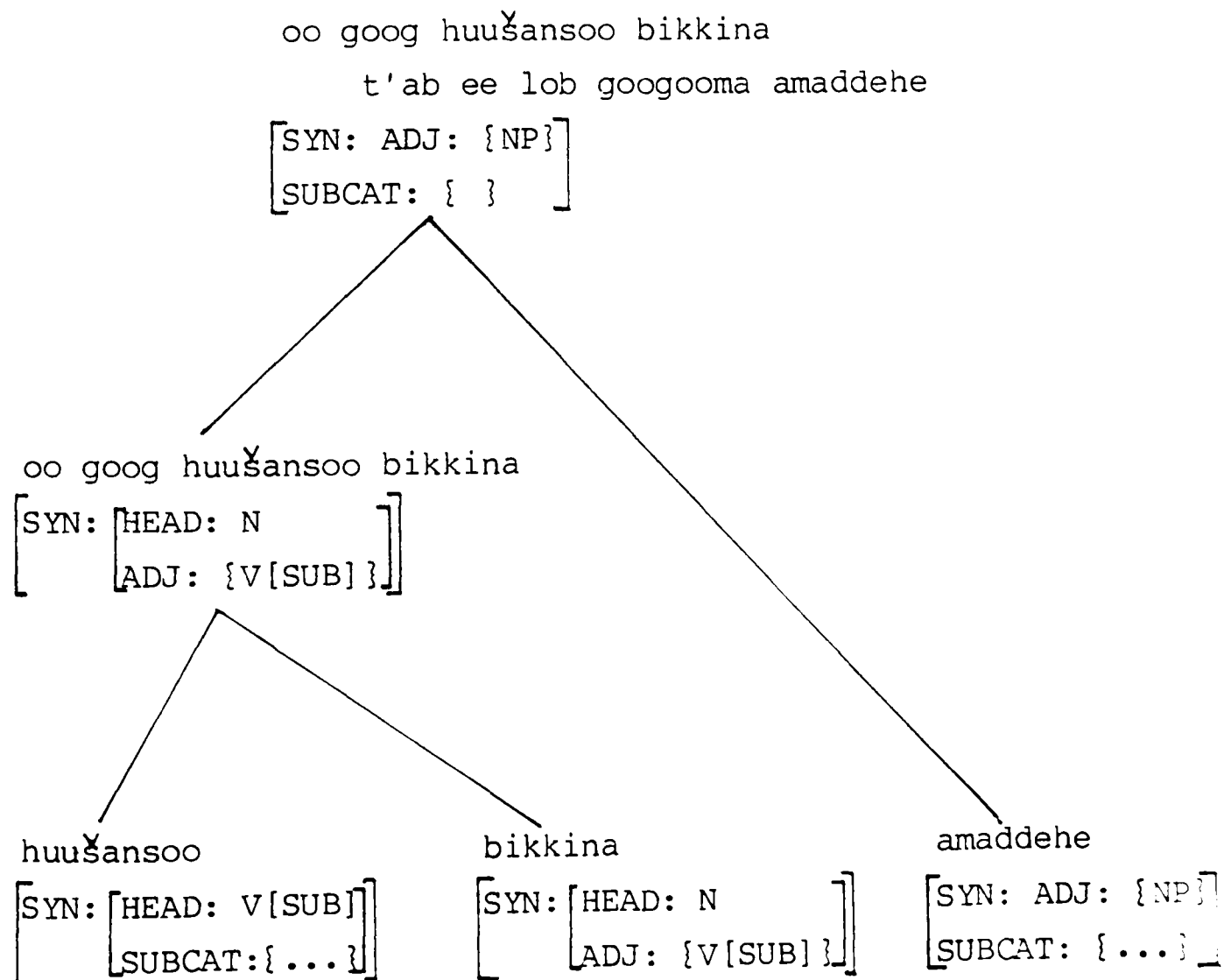
Consider now an example such as the following.

(5.38)

oo goog huušansoo bikkina, t'ab ee lob googooma amaddehe
'Because that road misleads, hold straight to the big road'

Here again, we can hope to account for such causal clauses via the adjunct attribute on the head sign, V[FNL].

(5.39)



As a first approximation, I have assumed that no further

unifying-in to the adjunct can occur following its unification with its head. Whether there is a clear restriction on the stage at which the adjunct can unify-in with respect to the complements of the head sign is not so certain; intuitively I speculate that at least the subject complement of the final verb can unify-in at a later stage, so that the adverbial is properly embedded within the matrix sentence. This would clearly be evidence worth evaluating more fully with regard to Borsley's proposal for a separate SUBJ feature.

How is the semantics of all this to be handled? This question is crucial and important for the expression of causally linked predicates cross-linguistically, but has received little attention in theoretical work in recent years. It would require the development of a whole new area of semantic attributes, and is a question which cannot be adequately explored within the present work. At the minimum, we might want to be able to describe in a sign, that the two clauses A and B are semantically related by a member of a set of relations such as {Reason, Result, (Purpose), Condition}.

Taxonomic work on such inter-clausal relations (Longacre 1976) has done the same for this topic as the various approaches to Case Grammar have done to establish an inventory of possible labelled relations. But, to my knowledge, no serious attempt has been made to incorporate work on inter-clausal relations into any theoretically interesting model of human language.

An alternative approach might be developed through Relevance Theory (Sperber & Wilson 1985). Blakemore(1987) has attempted to account for such English lexemes as therefore, after all, so, moreover, also, you see in this way, and Blass(1988) discusses various Sissala (Ghana) particles from this perspective. The descriptive discussion in 5.1.1 to 5.1.4 above has adopted a similar perspective. One important advantage is that there is no divisive taxonomy of form, function or meaning. The differences of interpretation that one intuitively wants to recognise arise from the interaction of the linguistic and cognitive con-

text. While there exists no notation in which to capture how the context and cognition interact to produce different readings, the above-mentioned works show how an approach based on Relevance Theory might be insightfully applied.

5.1.5.3. A -s-a Adjunct.

In the case of an adjunct like that in (5.40), there is a further question of how the head is to be specified, since its adjunctival function is marked not by a lexical head, but by the morphological -s-a.

(5.40)

hurbaat' murat beeddukkisam ... ganookko
 crop cutting complete-s-a he-threshes
 'As the harvesting finishes, he threshes (the crop)'

Nor is this an isolated case: in 5.1.3 a number of formatives are bound forms. Perhaps the most usual approach to adopt here is that in which the suffix is cliticised in the syntax, but it might well be questioned what empirical evidence there is that such formatives are indeed to be treated in this way. While there is a little in the present case, in that -s-a can be suffixed to both noun and verb heads, the conditional affixes, in contrast are specific to verb heads, and this is more like normal morphological affixation. I am wary of a cliticising approach.

The mainstream generative paradigm has alternatively postulated abstract nodes, such as AUX, COMP INFL, and which govern other, generally lexical positions, and Muysken(1980) has argued for extending this concept to apply to what he calls morphological control. In this, an abstract position transfers feature(s) to a morphological controlling element. In HPSG, of course, such abstract nodes are not an option.

The remaining option is that of formulating a HEAD feature structure, which specifies syntactic constraints and appropriate

semantic attributes, and transfers these between lexical and phrasal signs. The whole matter requires a full length study of its own, to establish a well-motivated morphological component for a unification grammar. Here I will suggest no more than adding a feature CONJ(unction), which specifies the various affixes, -s-a, -las, -aa2leens, -ta2n etc as its values.

5.2. COMPLEMENTATION.

5.2.1. Introduction.

Complementation is succinctly defined by Noonan(1985:42)

"By complementation we mean the syntactic situation that arises when a notional sentence or predication is an argument of a predicate. For our purposes, a predicate can be viewed as an argument of a predicate if it functions as the subject or object of that predicate."

In Hadiyya it makes little sense to define a complement, in the strict sense of the term, as a grammatical object (ie. a notional sentence/predicate in Absolutive Case) of another predicate. As we shall see, there are two complementising suffixes and a dative complement which will preclude so strict a definition. It is better for Hadiyya, (and perhaps for English too), to rephrase Noonan's explication in terms of subcategorisation: a complement is a subcategorised-for argument, whether obligatory or not. Indeed, it is in this sense that his use of the term argument is best understood.

Here are some Hadiyya verbs which take verbal complements of various categories.

(5.41)

ama2n-	'believe'	S[COMP: sa]
asse2-	'send'	NP S[SJ ₂]
awaad-	'use'	S[INF] VP[SJ ₁]
badar-	'waste effort'	VP[SJ ₁]
badd-	'fear'	NP VP[SJ ₁]
bolt'-	'be proud'	S[INF]
has-	'want'	VP[SJ] S[INF]
lab-	'seem'	NP[DAT] S[COMP:ka]
la2-	'know'	S[COMP: sa]
t'an-	'be able'	VP[SJ ₁]
labis-	'think'	VP[COMP: ka]
yakk-	'struggle'	VP[SJ ₁]
mal-	'doubt'	S[COMP: sa]

It can be seen from this that verbal complements fall into three types - subjunctive, infinitival, and complementised. Broadly speaking, SJ₁ are construed as VP here, SJ₂ and infinitival complements as S, and complementised complements as S. In the following sections I will deal in turn with the subjunctive complement (5.2.2), the infinitival complement (5.2.3), and the complementiser -sa (5.2.4).

5.2.2. The Subjunctive Complement.

Hadiyya has two subjunctive paradigms, whose morphology is described in 2.3.2.2, and which are distinguished by the VFORM features SJ₁ and SJ₂. The subscripts are mnemonic for the fact that SJ₁ requires that the verb of the matrix clause has the same grammatical subject, and SJ₂ requires that the verb of the matrix clause has a different subject. [Here then is part of Hadiyya's Switch Reference system, which is dealt with in greater detail in the next chapter]. I will deal with a description of the data in 5.2.2.1 and then in 5.2.2.2 with the application of the model to the data.

5.2.2.1. Description.

If (5.42b) is construed such that an is subject only of the final verb, or if there is no free-standing subject in the sentence, then it is grammatical with the reading 'I want him to go to Sooro.'

(5.42)

- a. (an) sooro mareena hasoommo
 I Sooro go-SJ₁ I-want
 1s/3s 1s
 'I want to go to Sooro'

- b. *(an) sooro marona hasoommo
 SJ₂

(5.43)

- a. (itt') sooro marona hasoommo
 he Sooro go-SJ₂ I-want
 1s/3s 3s
 'I want him to go to Sooro'

- b. *(itt') sooro mareena hasoommo
 SJ₁

(5.43b) is totally ungrammatical, purely and simply, because the AGR information on mareena and hasoommo restrict the subject to 1st person singular, same referent, and this contradicts the lexical information concerning itt', a 3rd person singular form. If there is no lexical subject, then (5.43b) is grammatical with the reading 'I want to go to Sooro.'

Verbs such as has- 'want', t'a2m- 'ask for', and kur- 'tell' must then be subcategorised for a subjunctive complement, and can unify with either SJ₁ or SJ₂ forms. The addressee of the two latter verbs is realised in Dative Case. By such means, the whole issue of Raising and Equi verbs beloved of English generative studies is largely preempted.

(5.44)

- a. itt' sooro marona kuraammo
 SJ₂ 1s
 'I told him to go to Sooro'
- b. sooro mareena itt'ena kuraammo
 SJ₁ 3ms-DAT 1s
 'I told him I go to Sooro'
- c. itt' sooro marona t'a2maammo
 SJ₂ 1s
 'I asked him to go to Sooro'
- d. sooro mareena itt'ena t'a2maammo
 SJ₁ 1s
 'I asked him if I may go to Sooro'

Other verbs will be subcategorised specifically for either an SJ₁ or SJ₂ complement. t'an- 'be able', and yakk- 'attempt', for example, subcategorise for a VP[SJ₁] complement, ie. one having a coreferential subject; in its reading as a lexical causative, iss- 'make' generally requires a non-coreferential subject.

(5.45)

- a. mahame issineena t'annoommoyyo
 what-even do-lp-SJ₁ be-able-lp-IMP-NEG
 'We are not able to do anything ...'
- b. ... itimmina gudisakkeena t'anakkamo
 to-eat prepare-SJ₁ be-able-3unspec
 'One is able to prepare (it) for eating.'
- c. ka kina iimaa2eena lobakat yakkaammo
 this stone raising-SJ₁ greatly I-tried
 'I tried very hard to lift this stone.'

- d. Annorii Ertiirii atoorattamisa t'issoor issukko
 Annoro-& Ertiro-& that-they-discuss Tisoro made
 'Tisoro made Annoro and Ertiro converse'

Of course, not only must the verb form be SJ_1 , it must also carry the same agreement features as the matrix verb. Without going into detail, there is overlap in the definition of the subject as same or different, such that same subject requires that the set of individuals defined must be properly included, one within the other. 1st singular can overlap with 1st plural, for example; see the discussion of this in Stirling(1988:31f).

Apart from its use as a complement, the subjunctive can also function as a simple subordinate clause.

(5.46)

- a. ... k'app'a2akka2a k'ut'umo2inne aad-aad k'asakka2a
 slowly with-spurtle poke-poke stabbing

mat k'at'a buuzalona k'ure2 suume ifiisakkamo
 one amount for-cooking pot's mouth one-covers

'... having slowly stirred with a spurtle, one covers the
 mouth of the pot for a while that it might cook.'

[Making Bu Mucho]

b. ee hanniinsem lasage gooto2o siggona
 that from-top after little for-cooling

haraar mu2utanne issakka2a hofokka egerakkamo
 wide thing-in putting little one-waits

'After that moreover, one puts it on something wide and
 waits for it to cool a little.' [Making Parched Grain]

In both examples, it should be obvious that the subjunctive here is a subordinate clause, without being a complement of the matrix verb; it is simply not possible to articulate a subcategorisation constraint to cover such examples.

5.2.2.2. Formalising the Subjunctive Complement.

The formulation of such data within HPSG is a fairly straightforward matter, simply based on previous work. Subjunctive complements are subcategorised-for in the head-verb feature structure, and the main issues concern the working out of control and agreement matters. Thus a partial head-sign for a verb such as has- 'want', will include the listing for subcat shown below.

(5.47)

SYN|SUBCAT { VP[SJ] ... }

Here I have only subcategorised for SJ: either SJ_1 or SJ_2 is a possible filler. But how is the selection of $SJ_1/2$ tied in with AGR requirements between subject and verb? prima facie at least three basic approaches can be suggested. (i) The head-sign has two disjunctive subcat listings, for SJ_1 or SJ_2 . (ii) The subscripts are treated as abbreviatory for two different feature structures (iii) Either SJ_1 or SJ_2 can act as filler, with no further problems, and the SS/DS and AGR requirements just fall out of the formalism.

Let us follow this through on specific examples. Take the example (5.48), of an SJ_2 complement.

(5.48)

šaašogo marona hasummo
 SJ_2 1s
 'I want him to go to Shashogo'

Partial signs for the two verb forms are as follows, meantime specifying the complement as SJ_2 in (5.50) for clarity.

(5.49)

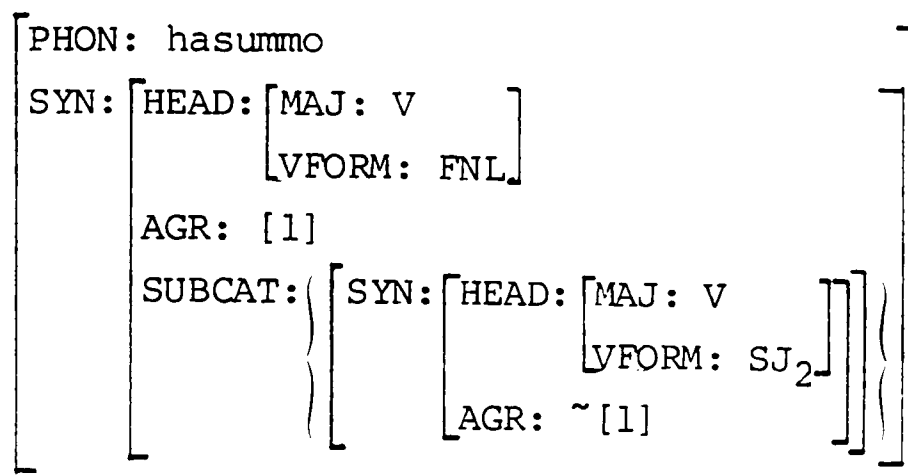
[PHON: marona
 SYN: [HEAD: [MAJ: V
 [VFORM: SJ_2
 AGR: [PER: 1 v 3
 [NUM: SG]]]]]]

(5.50)

[PHON: hasummo
 SYN: [HEAD: [MAJ: V
 [VFORM: FNL
 AGR: [PER: 1
 [NUM: SG
 SUBCAT: { SJ_2 .. }]]]]]

Stated approximately, the features of person, number and gender on the SJ_2 complement must not completely match those of the same AGR features on the head sign. Specifically, the complement here cannot be 1st person, since the head-sign specifies that value, and SJ_2 requires the subject not to be co-referential. In this example, then, the head-sign can be more fully, and informally, specified as below:

(5.51)



Leaving on one side the question of the status of a structure $\sim[1]$, it is clearly the case that it is not merely a lack of matching person-number-gender feature values that is required in such examples, but a semantic non-coreferentiality. Thus, for example,

(5.52)

Yohaannis (itt') Šaašogo marona hasookko

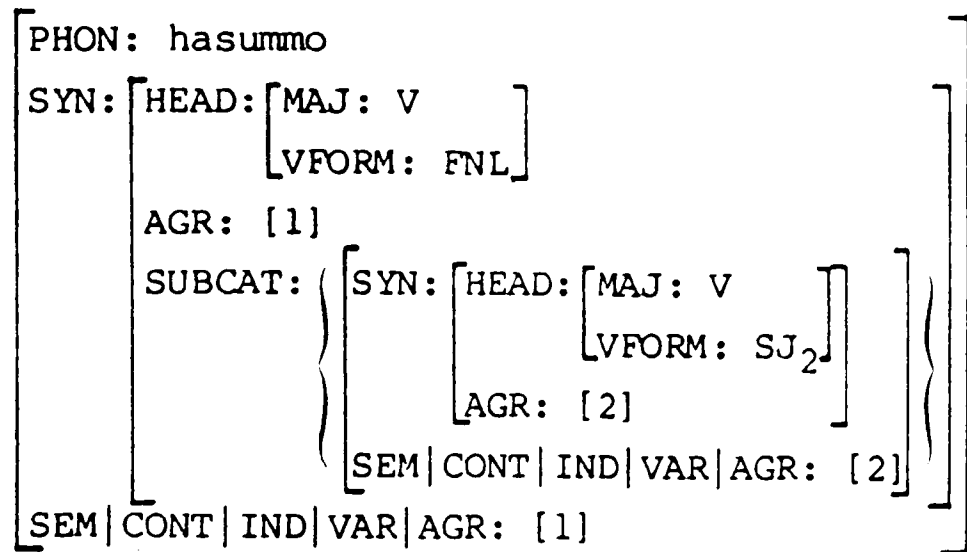
SJ₂ 3ms

'John wants him to go to Shashogo'

Here Yohaannis cannot be coreferential with itt' 'him', nor can it be the grammatical subject of both marona and hasookko. Yet in such a sentence, both verb forms, marona and hasookko as well as both Yohaannis and itt' are formally 3rd person masculine singular.

Here it is incontrovertible that we require a semantic non-coreferentiality. The obvious place to include this information, or requirement, in the feature structure, is in the semantic attribute of the head sign. This serves to further motivate the proposal of Pollard & Sag(1987), which I revised in 3.1.2.5, namely that AGR be located in the semantic attribute. I draw attention at this point to the economy with which this can be captured within the tri-modal sign of HPSG. (5.51) can now be more fully specified.

(5.53)



That is, what we require here is that the SEM|IND|VAR|AGR values, which refer to the grammatical subjects be differentially cross-indexed. Note that it is subject coreferentiality that is in question, not the concomitant verb agreement; the solution reduces to the latter in the case of non-explicit subject NPs. Note also how this mechanism achieves the switch-reference requirement without any additional feature structures, and see the fuller discussion in chapter 6.2.

It should by now be clear that subscripting of SJ in SUBCAT is only abbreviatory for a fuller cross-indexing of AGR and ROLE values in the head sign and its subcategorised-for subjunctive complement.

Clearly, the possible combination V[SJ₁, PER:1] with V[FNL, PER:1] will always be prohibited, since it is axiomatic that ego must be semantically coreferential throughout a sentence. So the sentence in (5.54) can only be acceptable on the second reading.

(5.54)

an Šaašogo marona hasoommo

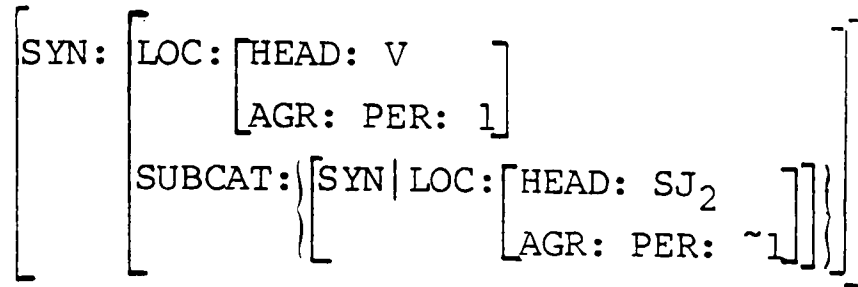
SJ₂ 1s

*'I want to go to Shashogo'

'I want him to go to Shashogo'

The person-number combination that must be prohibited, then, is the following:

(5.55)



Overtly identical syntactic AGR values can otherwise co-occur, but only if they are not also coreferential. This constraint is specified via the non-cross-indexing of IND|VAR|AGR values. Notice what we have done here. Non-coreferentiality of grammatical subject in a matrix clause and its SJ_2 complement has been achieved partly by syntactic and partly by semantic means.

It is often held that subject-verb agreement is a syntactic matter; this underlies most recent treatments of the phenomenon, which follow Keenan(1978) in defining the agreement options of natural language according to the function-argument notion, and Pollard & Sag(1987) are unconventional in locating AGR in the semantic attribute. I have suggested in 3.1.2.5 that the question is not one of preferring one of two such mutually exclusive alternatives, but of choosing an architecture with both semantic and syntactic faces.

That Hadiyya requires the contribution of both syntactic and semantic attributes suggests that cross-linguistically we might expect agreement to involve both attributes. Here again, a model in which the linguistic sign bundles phonological, syntactic and semantic information together is favoured.

Return now to (5.49) and (5.50), to consider the issue of control. The signs are repeated below, with ROLE values added in. To avoid needless confusion at this point, I have indexed the subjunctive sign with capital letters, and the head verb sign with numerals.

(5.56)

PHON: marona

SYN: [HEAD: [MAJ: V
[VFORM: SJ₂]
AGR: [A] [PER: 1 v 3]
SUBCAT: { NP_[B], NP_[NOM] [C] }]

SEM|CONT: [REL: go
ROLE₁: [C]
ROLE₂: [B]
[IND|VAR|AGR: [A]]

$$(5.57)$$

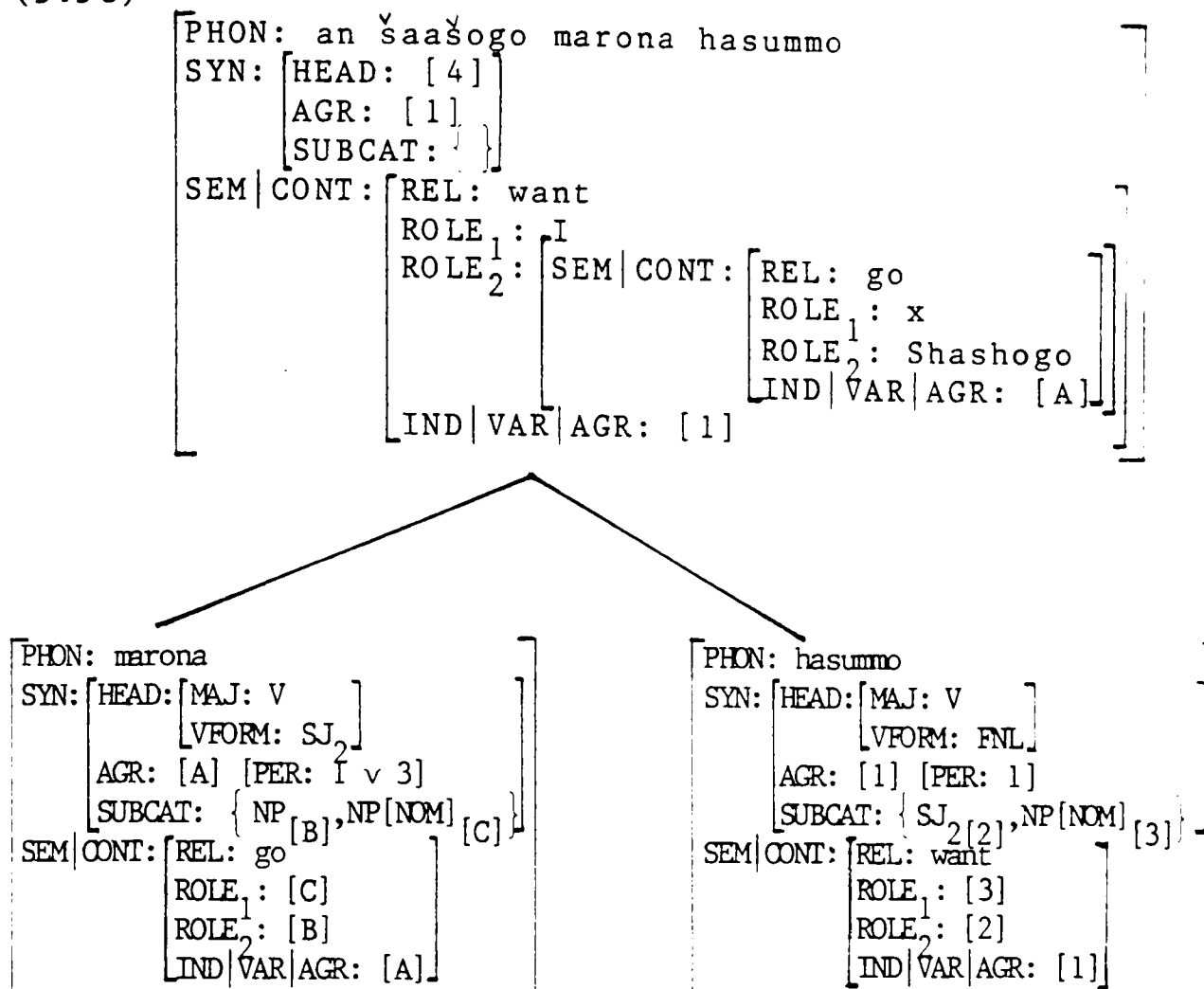
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[PHON: hasummo
  SYN: [HEAD: [MAJ: V
          [VFORM: FNL]
        AGR: [1] [PER: 1]
        SUBCAT: { SJ2[2], NP[NOM] [3] }
  SEM|CONT: [REL: want
              ROLE1: [3]
              ROLE2: [2]
              IND|VAR|AGR: [1]]

```

The unification of these proceeds thus, ignoring the details of unifying-in the nominals:

(5.58)



And an unspecified individual, x, goes to Shashogo.

We turn our attention briefly now to consider SJ₁ complements, via the brief example sentence in (5.59) and the initial lexical signs in (5.60) and (5.61).

(5.59)

ʃaaʃogo mareena hasoommo
 SJ₁ 1s
 'I want to go to Shashogo'

(5.60)

PHON: mareena
SYN: HEAD: [MAJ: V VFORM: SJ ₁]
AGR: [PER: 1 v 3] NUM: SG]

(5.61)

$$\left[\begin{array}{l} \text{PHON: hasummo} \\ \text{SYN: } \left[\begin{array}{l} \text{HEAD: } \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: FNL} \end{array} \right] \\ \text{AGR: } \left[\begin{array}{l} \text{PER: 1} \\ \text{NUM: SG} \end{array} \right] \\ \text{SUBCAT: } \{ \text{SJ}_1 \dots \} \end{array} \right] \end{array} \right]$$

Here again, it is not mere matching of AGR attribute values that is required, but a semantic coreferentiality (although coreferentiality will of course be inferred from matching features, other things being equal). Once more, I propose handling this via the semantic attribute, namely

(5.62)

$$\left[\begin{array}{l} \text{PHON: hasummo} \\ \text{SYN: } \left[\begin{array}{l} \text{HEAD: } \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: FNL} \end{array} \right] \\ \text{AGR: [1]} \\ \text{SUBCAT: } \left\{ \left[\begin{array}{l} \text{SYN: } \left[\begin{array}{l} \text{HEAD: } \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: SJ}_1 \end{array} \right] \\ \text{AGR: [1]} \end{array} \right] \right\} \end{array} \right] \end{array} \right]$$

[SEM|CONT|IND|VAR|AGR: [1]]

Look briefly first at the question of how the 'sameness' of subject reference is interpreted for such complements in Hadiyya. (See Munro, 1985). The case where one subject is properly included within the other is an acceptable co-reference, thus:

(5.63)

a. malleena hasoommo

lpl ls

'I want us to go'

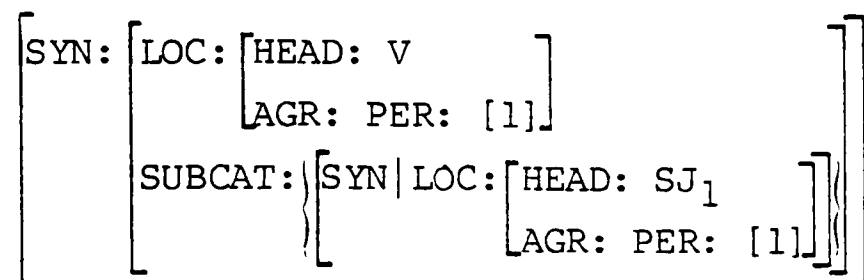
b. mareena hassoommo

ls lpl

'We want me to go'

This is exactly the case that was prohibited in SJ_2 complements, so that the prohibition required in (5.55) must now be restated as a possible unification for SJ_1 complements. This perceived coreferentiality extends to the inclusion of 2sg with 2pl or 3sg with 3pl subjects.

(5.64)



Not only is the subject coreferential in such cases, it is restricted to the instantiation of only one free-standing NP in the sentence. Even where the subject in initial position is a full NP, no resumptive pronoun is permitted before the matrix verb. Thus

(5.65)

- a. an Šaašogo mareena hasoommo
- b. Šaašogo mareena an hasoommo
'I want to go to Shashogo'
- c. Erc'aafe Šaašogo matteena (*ise) hasso2o
'Erchafe wanted to go to Shashogo'

How is the subject restricted to one occurrence? And, in the case of (5.65a) is the subject an 'I' subject of the complement or the matrix verb, or even of both? A comparison with the following is insightful.

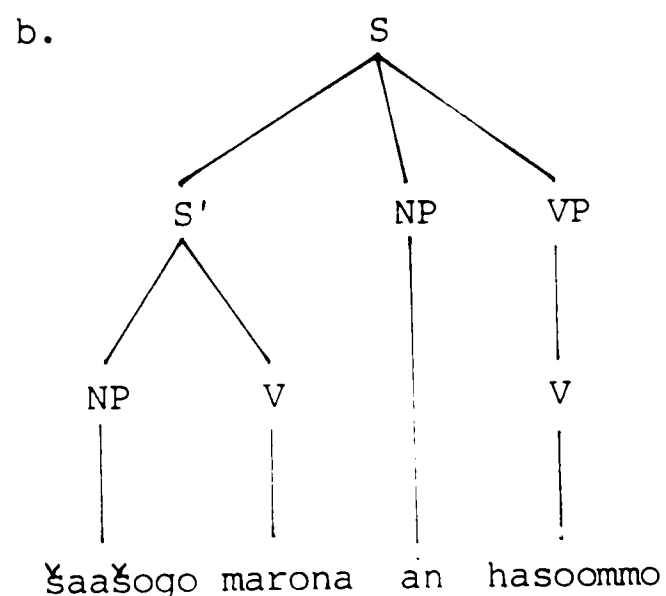
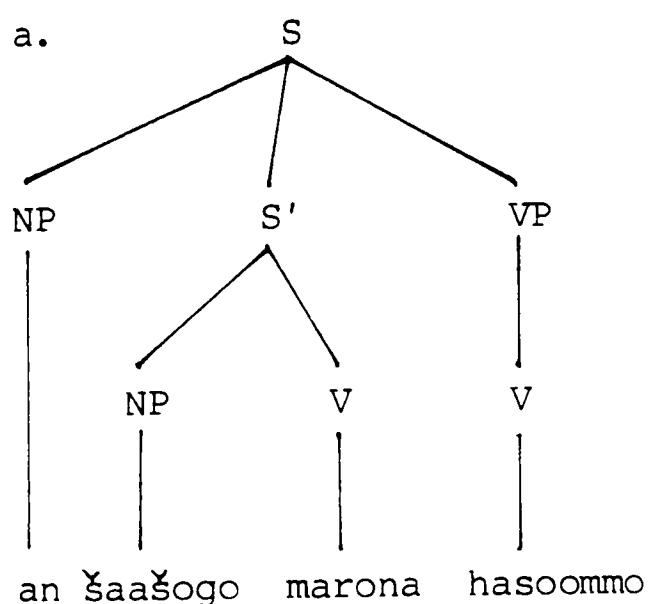
(5.66)

- a. an Šaašogo marona hasoommo
- b. Šaašogo marona an hasoommo
'I want (X) to go to Shashogo'

The subject of marona is not an 'I', but unspecified; and

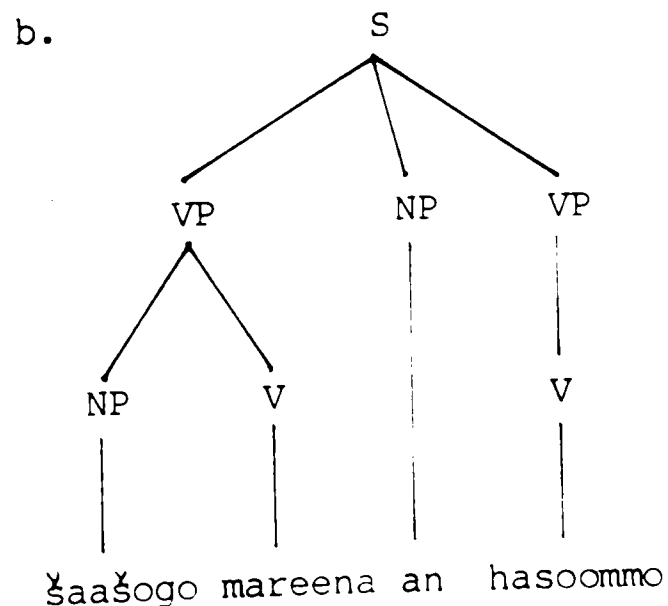
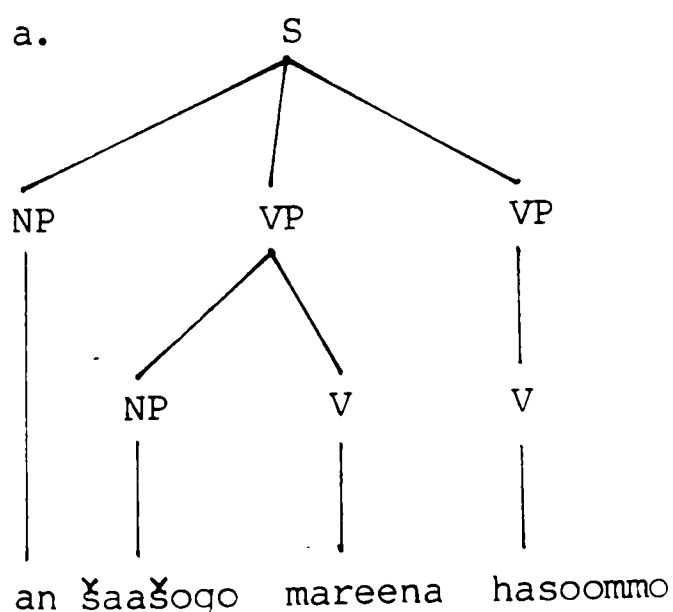
conversely, an 'I' is only the subject of hasoommo, since hasoommo is 1st sg, and marona here is 3m.sg. I know of no evidence to support an analysis in which an here is dislocated, so that (5.66) I take to exhibit free constituent order and an initial ternary expansion, as in (5.67). This is in distinction to the conventional expectation that a subordinate complement is embedded under its subordinator; here there is grammatical, but not configurational subordination. I denote the complement here loosely as S'.

(5.67)



Whether S' expands giving an empty category subject is irrelevant to present concerns, although, as in chapter 3, I would argue for unification which inserts an open variable. Treating (5.65) analogously, leads to the trees:

(5.68)



An attempt to analyse an in (5.65a) as subject of mareena would require the complement subject to control the matrix verb which subcategorises for it, which would be very odd indeed! If (5.68) is correct, then the assignment of an as explicit subject of the matrix verb and not the subjunctive is made. The subjunctive, on this analysis, cannot take a subject -- that is, it is not subcategorised for one, its sign then including the following partial structure in which it subcategorises for an NP whose Absolutive Case is specified by default, and no NP[NOM].

(5.69)

$$\left[\begin{array}{l} \text{PHON: mareena} \\ \text{SYN: } \left[\begin{array}{l} \text{HEAD: } \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: SJ}_1 \end{array} \right] \\ \text{AGR: } \left[\begin{array}{l} \text{PER: } [1 \vee 3] \\ \text{NUM: SG} \end{array} \right] \\ \text{SUBCAT: } \{ \text{NP} \} \end{array} \right] \end{array} \right]$$

Control of such complements is achieved as follows:

(5.70)

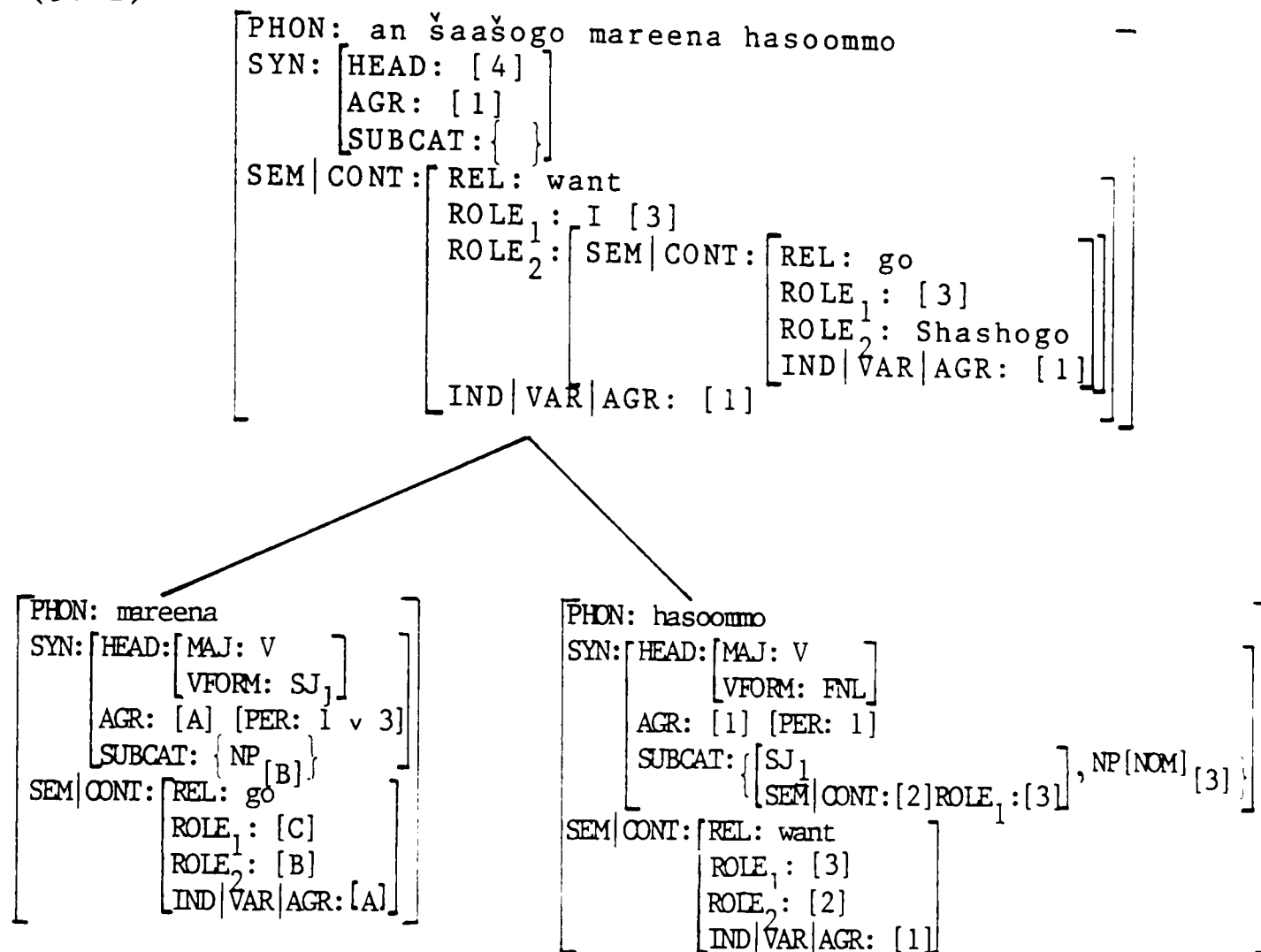
$$\left[\begin{array}{l} \text{PHON: mareena} \\ \text{SYN: } \left[\begin{array}{l} \text{HEAD: } \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: SJ}_1 \end{array} \right] \\ \text{AGR: } [A] \left[\begin{array}{l} \text{PER: } [1 \vee 3] \\ \text{SUBCAT: } \{ \text{NP}_{[B]} \} \end{array} \right] \end{array} \right] \\ \text{SEM|CONT: } \left[\begin{array}{l} \text{REL: go} \\ \text{ROLE}_1 : [C] \\ \text{ROLE}_2 : [B] \\ \text{IND|VAR|AGR: } [A] \end{array} \right] \end{array} \right]$$

(5.71)

$$\left[\begin{array}{l} \text{PHON: hasoommo} \\ \text{SYN: } \left[\begin{array}{l} \text{HEAD: } \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: FNL} \end{array} \right] \\ \text{AGR: } [1] \left[\text{PER: } 1 \right] \\ \text{SUBCAT: } \{ \text{SJ}_1[2], \text{NP[NOM]}[3] \} \end{array} \right] \\ \text{SEM|CONT: } \left[\begin{array}{l} \text{REL: want} \\ \text{ROLE}_1 : [3] \\ \text{ROLE}_2 : [2] \\ \text{IND|VAR|AGR: } [1] \end{array} \right] \end{array} \right]$$

Ignoring the details of unifying-in the nominals, the unification of these proceeds as follows,

(5.72)



Essentially then, control is handled as outlined in 3.1.2.2, in that the lexical sign captures in its formalism the essential semantic facts, more specifically, in the lexical cross-indexing of subcategorised complements with ROLE.

5.2.3. The Infinitive Complement.

What I refer to as the infinitive in Hadiyya is the verb stem suffixed by -imma. It lacks inflection for person, number or tense-aspect, and is a non-varying form. It has many of the features of the nominal -- it can be Case marked, and is able also to take a preceding genitival element, ki waarimma 'your coming' etc. Nonetheless, it is not simply a nominal, as will emerge in a consideration of the following data.

Hadiyya permits infinitival complements in subject, object and oblique Case positions.

(5.73) --- subject

- a. manniins aa2akka2 luwwa
men-from received things

k'ak'isakka2a dabarimm erane
quickly to-return is-good

'Returning quickly things which one received from
people, is good.'

- b. ammaninne meeriins mine daba2limmina hasakkolas,
time-on market-from home to-return-DAT want-3r-CONJ

daarinne meera marimm hasisookko
dawn-on market to-go is necessary

'If one wants to return home from market on time,
going to market early is necessary'

Note in (5.73a) the unspecified subject in k'ak'isakka2a, which modifies the following infinitive, and is coreferential with the relative verb aa2akka2, and also that luwwa is Absolutive, and therefore object of the infinitive. In (5.73b) note the Dative Infinitive in the conditional clause with the object mine and ablative meeriins.

(5.74) --- object

"waaccamo huletinya dereja timhirti bet" yakkam
Waachamo Second Level Lesson House called

beyyonne losimma amadummo
place-on to-learn I-held

'I started studying at the place called "Waachamo
Secondary School"'

(5.75) --- Dative

- a. uggaata salaliins annann issimmina k'ure2 suum
 whey curd-from separate to-make-DAT pot's mouth

fit'amu anc'inne karamaa ... k'ubbookko
 tease-PAS fibe-COM tie-PAS ... it-will-be-inverted

'The mouth of the pot will be tied with teased out
 insete fibre and inverted to make the whey separate
 from the curd'

- b. uggaatooma c'oggisimmina awaado lucco
 whey-ANA to-drain-DAT useful thing
 'The thing which is used for draining the whey'

The Dative infinitive is a complement of purpose. Another example of this occurred in (5.73b) above.

(5.76) --- ablative

waa2a sawwakko2 bee2 luwwanne ubakka2a iik'amimmiinse
 God thinking lack thing-on falling to-be-broken-ABL

eese gatise
 me save

'God, save me from being broken by falling on the
 unforeseen thing '

(5.77) --- locative

mik'e iik'aa itimmanne goticciins hobbicc lobane
 bone breaking to-eat-LOC hyena-ABL lion is-great
 'On the breaking and eating of bones, a lion is better
 than a hyena'

Although a variety of NP complements are associated with the

infinitive in the above data, they are all subjectless, and that is certainly the common form in Hadiyya. But, there are examples of infinitival constructions with subject complements also.

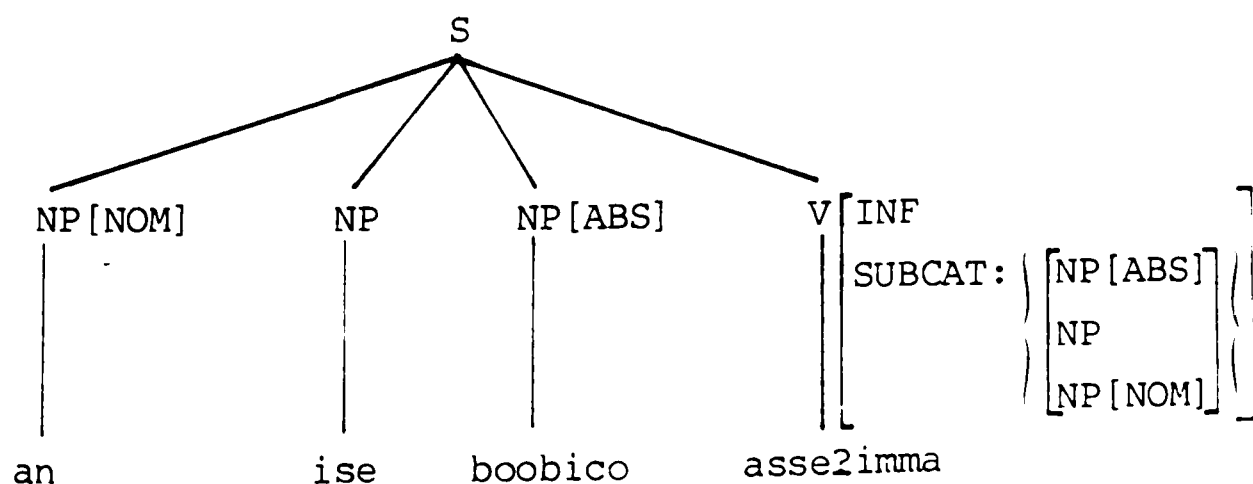
(5.78)

- a. an ise ertiir beyyo boobico asse2imm hasisookko
 I her Ertiro's place Bobicho to-send is-necessary
 'It is necessary I send her to Ertiro at Bobicho'
- b. oos itt'uwu darabinne ball hundam lellimma iittoommo
 children their friends every day to-play I-like
 'I like children to play with their friends every day'

The infinitive is head of the sentential subject in (5.78a), and in agreement with the final verb. In (5.78b) the infinitive is object complement of the final verb. But in addition, both have not only their own object and oblique complements, but subjects in Nominative Case, an 'I' and oos 'children'. It is clear that not only is this "infinitive" not merely a nominal, it is fully sentential.

In seeking to apply these data to an HPSG format, look first at the infinitival complement in (5.78a). In the structure suggested below, I have simplified the sentence by removing the adjunct ertiir beyyo. Recall that motion verbs put their goal in Absolutive, hence boobico rather than some form of locative.

(5.79)



Clearly, an infinitive subcategorises for the normal range of complements as its corresponding finite forms.

(5.80)

[PHON: asse2imma		
[SYN:	[HEAD:	[MAJ: V
		[VFORM: INF
	[SUBCAT: { NP[ABS] [3], NP [2], NP[NOM] [1] }	
	[SEM|CONT: [REL: send	
	ROLE ₁ :	[1]
	ROLE ₂ :	[2]
	ROLE ² D:	[3]

It is also clear from the above data that no nominal complement of the infinitive is necessarily coreferential with any complement of the matrix verb, and unification of the infinitival sentence with its matrix verb proceeds without complication. In examples like (5.78), an explicit matrix verb subject can occur in two positions: before the infinitival string, or following it, before the final verb (but not both places simultaneously). This confirms the constituent structure in (5.81).

(5.81)

[(an) [oos itt'uwu darabinne ball hundam lellimma]
(an) iittoommo]

Nonetheless, such coreferentiality can occur; thus

(5.82)

timhirti minenne losimma amadummo
'I started to learn at school'

Partial feature structures for the final verb and its infinitival complement are shown below in (5.83) and (5.84).

(5.83)

[PHON: amadummo		
SYN:	HEAD: [MAJ: V]
	VFORM: FNL	
	AGR: [1] [PER: 1	
	NUM: SG	
	SUBCAT: {	
	SYN: [HD: [MAJ: V], [NP: NOM
	VFORM: INF	
	SUBCAT: { ... NP [AGR: [1]] }	
	SEM|CONT: ROLE ₁ : [2]	
SEM|CONT:	REL: start]
	ROLE ₁ : [1]	
	ROLE ₂ : [2]	

(5.84)

[PHON: losimma]
SYN:	HEAD: [MAJ: V	
	VFORM: INF	
	SUBCAT: { NP _[2] , NP _[1] }	
SEM|CONT:	REL: learn	
	ROLE ₁ : [1]]
	ROLE ₂ : [2]	

Control is exerted in (5.84) through the cross-indexing of subcategorised category and ROLE value, as before.

From the examples already given in this section, it should be clear that the infinitive is generally subjectless, and in those cases, I am proposing that a variable is unified in to subject ROLE, for assignment pragmatically.

5.2.4. The Complementiser -sa.

5.2.4.1. -sa.

-sa as a conjunction has been dealt with in 5.1.3.2 and here I exemplify its function as a complementiser.

(5.85)

- a. ha2n hurbaat ganamukkisa mo'ulas ...
 upper grain beat-PAS-3s-SP-COMP see-3s-SP-CONJ
 'If he sees that the grain on top has been threshed ..'
 [How a Farmer Works]

- b. at k'ot'issoo2isinaa kiinii annann ihamoo
 you strengthen-COMP-DAT-& from-you separate be-3pl

bee2isa maase2loo2isinaa keese uunt'inaammo
 lack-COMP bless-COMP-DAT-& you we-have-prayed

'We have prayed that you strengthen us, and that you
 bless us that we do not become separated from you'

[A Morning Prayer]

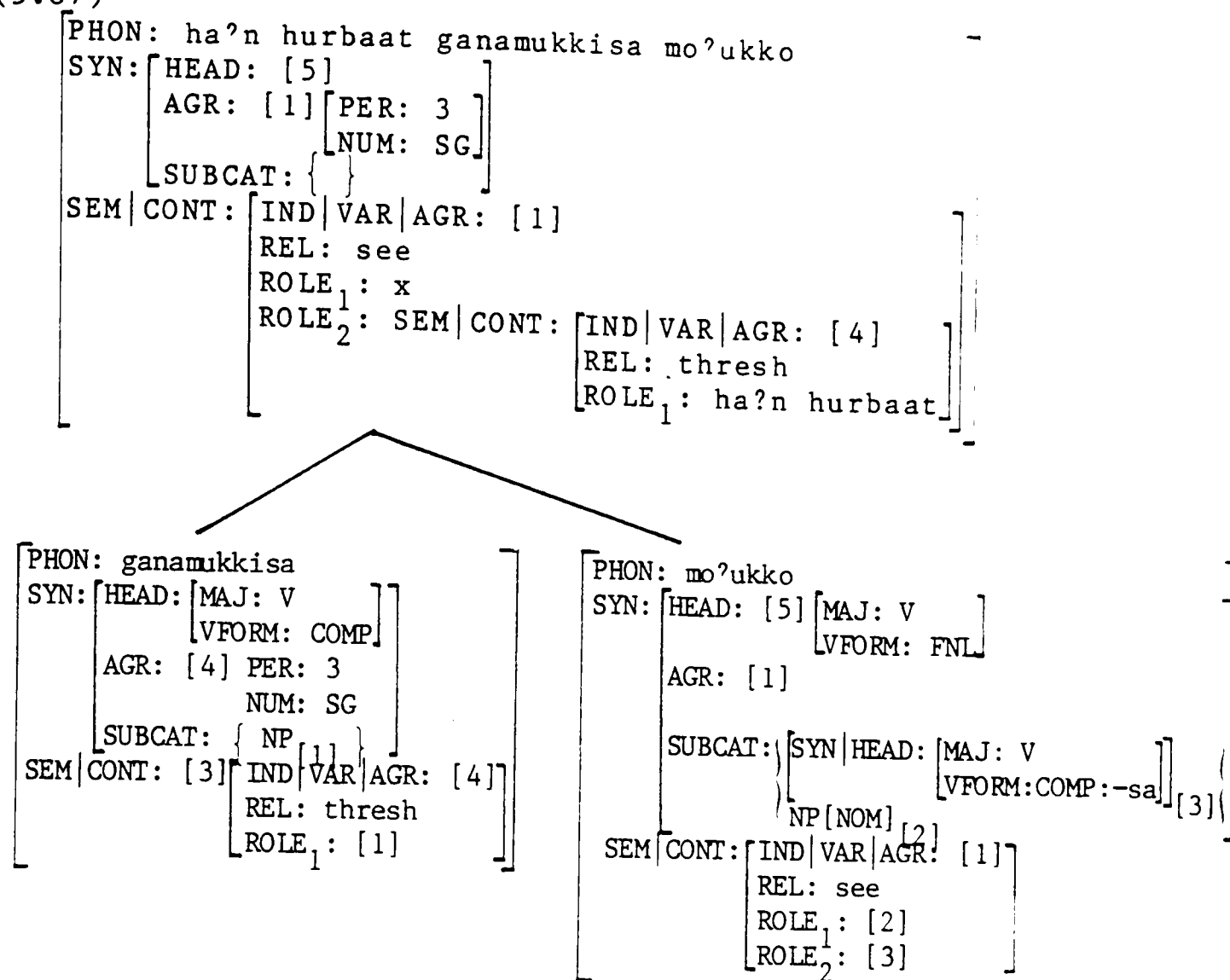
In (5.85a), ganamukkisa heads a VP complement of mo2- 'see', and in (5.85b) there are two conjoined complements, which are further Case-marked as Dative, as well as the embedded purposive clause 'that we do not become separated from you.'

Looking now briefly at the application of HPSG formalism, we consider the next example.

(5.86)

- ha2n hurbaat ganamukkisa mo2ukko
 'He saw that the grain on top was threshed'

(5.87)



Here I have added COMP to the values of VFORM, with at least the value -sa. Selection of complement type is determined by SUBCAT of the matrix verb, where control requirements are specified, as with subjunctive and infinitival complements.

5.3. SUMMARY.

In this chapter I have discussed subordinate predicates in Hadiyya, first, outlining a general solution for adverbial adjuncts following Pollard & Sag(1987), and then considering in some detail the formalisation of subjunctive complements with particular attention to control constraints on subject (non-)coreferentiality, of infinitival complements, and complementiser sentences.

CHAPTER 6.

COORDINATE VP AND S.

Outline

- 6.1. THE SERIAL SENTENCE.
 - 6.1.1 Occurrence and Characteristics.
 - 6.1.1.1 Occurrence
 - 6.1.1.2 Characteristics.
 - 6.1.2 Previous Analyses.
 - 6.1.3 The SVC in Hadiyya.
 - 6.1.3.1 The Hadiyya data
 - 6.1.3.2 Uses of Converb₁
 - 6.1.3.3 Characteristics of the construction
 - 6.1.3.4 Categorical status of the construction
 - 6.1.4. An HPSG Formulation.
 - 6.1.4.1 Combinatorial potential
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- 6.2. SWITCH REFERENCE.
 - 6.2.1 Introduction and Characterisation.
 - 6.2.2 Previous Analyses.
 - 6.2.2.1 Finer(1985a).
 - 6.2.2.2 Stirling(1988).
 - 6.2.3 The Hadiyya Data.
 - 6.2.3.1 SR in Hadiyya.
 - 6.2.3.2 Characterisation of the Construction.
 - 6.2.3.3 Coordination of more than Two Clauses.
 - 6.2.4 Formalisation.
- 6.3. SIMULTANEITY.
- 6.4. SUMMARY.

In this chapter I look at the mechanisms used in Hadiyya to coordinate clausal predicates. I will motivate an analysis in terms of coordination by internal evidence, as well as by the contrast between these structures and those already considered in Chapters 4 and 5.

In section 6.1 I will consider the serial sentence with its distinctive clause chaining, and set it out as the predicate conjoining structure par excellence in Hadiyya. Section 6.2 will move on to consider switch reference, and section 6.3 a rather idiosyncratic structure, as sentence conjoining mechanisms.

6.1. THE SERIAL SENTENCE.

In the following sections of 6.1, I will look briefly at the construction called serialisation in 6.1.1, its characteristics in 6.1.2, and some previous analyses in 6.1.3. I will then offer Hadiyya data in support of my claim that Hadiyya too is a serialising or clause-chaining language, and in 6.1.5 will consider how it may be analysed in HPSG format.

6.1.1. Occurrence and Characteristics.

6.1.1.1. Occurrence.

In many languages, a construction has been reported, described variously as the serial sentence, the serial verb construction, serialisation, etc. It is known in languages as diverse as the Kwa languages and others of West Africa (Stahlke 1970, Oyelaran 1982, inter alia), various creoles (Wingerd 1977, Sebba 1987, inter alia) [at least those having an African substratum], Chinese (Li & Thompson 1973, 1978), and reported for Malayalam (but contrast Jayaseelan 1984), Hindi-Urdu, Vietnamese and Cambodian. (6.1) illustrates the construction; the diacritics are tone marks: for explanation of which, see the original works.

(6.1)

- a. ó'ó' shí jí ^tsúá ríá
 she will-cook yam pound eat

'She will cook, pound and eat yam'

[Bendor-Samuel, 1968; Izi, Nigeria]

- b. ù kpá kíyzéé mòng ówl
 he take knife cut meat

'He cut the meat with a knife'

[Pike, 1967; Vagala, Ghana]

c. an rini peti wur-tí

I him send go-inside/future

'I will send him inside'

[Foreman, 1974; Yessan-Mayo, Papua New Guinea]

d. zhǎng-sǎn chūan-shang yīfu tiǎo zài dì-shang

Zhang-san put-on clothes jump on floor

'Zhang-san put on his clothes and then jumped on the floor.'

[Li & Thompson, 1973; Chinese]

To some, the inclusion of Chinese here as exhibiting the same construction type as the West African data, raises questions. Papua-New Guinean languages exhibit a similar phenomenon, there often described as verb or clause chaining. (See Longacre 1972, Franklin 1971, Foley 1986, Foley & Olson 1985, Foley & van Valin 1984).

(6.2)

sikuno nomehonɿɿngki sukwo'miyomo hofantiso toho
darkness came-seq-3s night-in mosquitoes bite

nelofahonɿɿngki kokoko u nakwo mempo saho
us-bit-seq-3s intens. excl. we outside sleep

mafosyawosofo

neg-sleep

'Darkness came and at night mosquitoes bit us an awful lot so (being) outside we couldn't sleep.'

[Longacre 1972; Wojokeso, PNG.]

Although few have made any connection, Foley and his co-authors deal with serialisation and clause chaining as variations of a single construction type cross-linguistically, discussing such data as the West African, Chinese and New Guinean together. It is outwith my purpose here to examine the characteristics of the range of data sufficiently well to provide any motivated cross-linguistic resolution of this, but when (6.3) is compared with the clause chaining data in (6.2), it seems at least plausible that this is a valid comparison.

(6.3)

Olú rán wa wá iṣu gbé ko òrẹ rẹ padà
 Olu send us seek yam carry meet friend his return

sí Èkó ní ànà
 to Lagos yesterday

'Olu sent us yesterday to find yams and take them to meet his friend so that he (Olu's friend) can take them with him back to Lagos.' [Oyelaran, 1982; Yoruba, Nigeria]

One of the difficulties in making a convincing cross-linguistic claim is simply, that, broadly speaking, languages claimed to exhibit clause-chaining are inflecting and SOV languages, whereas serialising languages tend to be isolating and SVO in type.¹ The inevitable concomitant differences in surface structures gives cause for hesitation before making any strong claim to identity.

In contrast, Hetzron(1970:346ff), referring to Stahlke (1970), asserts that the Ethiosemitic language Amharic is not a serialising language, while Givon(1983b) avers it to be a clause-chaining one. I interpret Hetzron as denying that Amharic surface strings form close-knit verb clusters of the sort seen in the West African data above. If the term serialising is construed to include the kind of phenomena evident in (6.2) and (6.3) above, then Hetzron's remark must be seriously questioned.

For many, SVCs crucially involve valence expansion, this being a central defining characteristic of the construction. A corollary of this is that valence increasing sequences of verbs reveal strong cooccurrence restrictions. To insist on this would not only exclude Chinese (see 6.1d), but also impose a strong restriction on West African data, in which the SVC proper is

1. See Li & Thompson(1974), Lord(1973), (1982), Givon(1975), who each see the serial construction playing a significant role in diachronic change.

distinguished from a broader sentence strategy of consecutivisation. What we seem to have, then, is a continuum, in which the narrowly defined SVC is at one extreme, abutted by consecutivisation, clause chaining (etc), with overt sentence conjunction mechanisms at the other end. In any single language these distinctions may not be clearly defined.

This is the position I shall assume, then, and I will continue to use the terms serialising and clause-chaining to speak of the same construction type in Hadiyya, with two caveats: that I do not thereby claim to have explicitly motivated this, and that clause-chaining is generally used in a wider sense, referring to a construction in which explicitly adverbial clauses can occur; it is not therefore necessarily subject to the monoclausal claim of the SVC.

6.1.1.2. Characteristics.

The surface structure of a serial verb construction(SVC) consists of a subject NP followed by a string of finite verbs, with perhaps their NP complements. Thus

(6.4)

NP V (NP) V (NP) V ...

Although many examples in the literature are concerned with cases in which all verbs have the same subject, according to Oyelaran (1982), this is not a universally valid constraint for all languages in West Africa. In at least some West African languages, when the first verb is transitive, its following object is (or may be) the understood subject of V₂, see Voorhoeve(1975) and Jansen et al(1978).

One reason that a good characterisation is still elusive, is that many recent contributions have been restricted solely or largely to short exemplars of only two verbs. I believe it is extremely important to view the construction broadly, to include examples like (6.3), in which it is abundantly clear that no

familiar construction (familiar to European linguists, that is) such as complementation is under review.

Nevertheless, in spite of this unsatisfactory state of affairs, two general conditions that are definitive of SVCs are, that verbal predicates are juxtaposed without any overt conjunctive element, and that (at least) one NP argument is "shared", in surface structure in some sense, with more than one verb. Construed in this way, there is some justification in combining the SVC and clause-chaining data. This characterisation will sharpen up throughout the chapter, and a language specific characterisation will be clear by the end.

(6.1b) is a particularly clear example of what might be referred to as the close knit SVC, in which verbals may act as valence-increasers (see Foley & Olson 1985 and Sebba 1987), or in some cases as modal auxiliaries, in reporting a single, action or process. (6.3) on the other hand is typical of a more loosely-knit structure, reporting a string of actions or processes, and more obviously akin to clause chaining.

6.1.2. Previous Analyses.

There is a considerable body of literature in West African languages concerning the SVC, going back to the descriptive work of such people as Christaller(1875) and Westerman (1930), and in more recent years concerned principally with the formal derivation of such sentences in the grammar.

6.1.2.1. Early Formal Analyses.

It is Stewart(1963) who is accorded the merit of introducing the term serialisation; he proffered a transformational analysis involving two underlying coordinate Ss with Equi NP deletion. Next, Stahlke(1970), assuming a Generative Semantics framework, and limiting his consideration to the semantically close-knit exemplars, suggested that SVs are complex lexical items.

Bamgbose(1974) is the first of modern workers, to my knowledge, to reject a unitary analysis (although Christaller had distinguished "essential" and "accidental" combinations which parallel my informal description of close- and loose- knit SVCs); he derives one type from coordinate Ss, and the other from coordinate VPs. Schachter(1974) is first, I believe, to reject a transformational solution altogether, in favour of a phrase structure analysis, and ever since, the consensus has rejected derivation by transformation from underlying coordinate sentences, and this before the recent resurgence of interest in phrase structure grammars. Still, a variety of alternative proposals have been put forward. Thus

(6.5)

- | | | | | | | | | |
|----|----|-----|---|----|------|------|------------------|----------------------------|
| a. | S | --- | > | NP | VP | VP | | (Lord 1974) |
| b. | S | --- | > | NP | Aux | VP | VP* | (Schachter 1974) |
| | | | | | | | where * > 1 | |
| c. | VP | --- | > | V | (NP) | (PP) | (VP) | (Williams 1971) |
| d. | VP | --- | > | V | (PP) | | | |
| | | | | VP | --- | > | V (NP) (PP) (VP) | (Oyelaran 1982) |
| e. | VP | --- | > | VP | VP* | | | (Jansen <u>et al</u> 1978) |

(6.5e) was rejected by Jansen et al(1978) because it requires one to "assign the correct grammatical relations between verbs, NPs and VPs on the basis of contiguity ..." (op.cit. p.152). [Within HPSG, I don't believe this problem arises, as the following sections should bear out].

The debate has revolved around the issues of the categorial nature of the lexical components of a SVC, namely, whether each is fully verbal or not; whether the restriction requiring the same-subject for all verbs in the construction results from NP deletion or not; the nature of putative argument sharing; whether VPs or Vs are coordinated or embedded one within another; and whether the SVC is a single constituent or not. None of the proposals in (6.5) suggests that the single NP subject results from NP deletion. Williams' and Oyelaran's solutions clearly consider the SVC to be a constituent, and both also favour the

SVC as an embedding construction. The other solutions view it as a coordinate construction, but not a constituent.

6.1.2.2. The Monoclausal Consensus.

Schachter(1974), Foley & Olson(1985) and Sebba(1987) among others, have provided convincing evidence to motivate monoclausal analyses, and I will review some of their arguments briefly now.

First, for some languages, a monoclausal analysis is an obvious corollary of the fact that serial verb constructions are one word grammatically. Secondly, some or all of tense, aspect, mood and negation are constrained to be the same over the whole construction; the feature is more often marked once only for the SVC, but in some languages is marked on all verbs, in which case the feature must agree for all. Thirdly, some NP complements are simultaneously associable with more than one verb. Formal analysis in which a single constituent is simultaneously the argument of two different functors is strongly rejected by most linguists, as not producing well-formed functions; see Cann(1987:58) who thus disallows strings such as *'Kim likes eat cheese.' But consider data such as (6.1a), or the following.

(6.6)

a. Olú lo aṣọ náà gbó

Olu used dress the wore-out

'Olu wore out the dress.' [Bamgbose 1974; Yoruba]

b. John khàp rót chon khwaay taay

John drive car collide buffalo die

1. 'John drove the car, collided with a buffalo and it died.'

2. 'John drove the car, collided with a buffalo and the car stalled.'

3. 'John drove the car, collided with a buffalo and he died.'

[Tony Diller, in Foley & Olson 1985; Thai]

While it is far from incontrovertible that any argument in the above is simultaneously an argument of two different verbs, it is clear that two-way associations must be accounted for, and in the absence of well-motivated anaphoric solutions across multi-clause units, such data provide evidence in support of monoclausal constituency.

6.1.2.3. Sebba(1987).

Mark Sebba, the most recent full-length study of serialisation that I am aware of, seeks to provide a cross-linguistic solution, with particular attention to the Sranan creole. He formulates his solution within a general GPSG framework, and for that reason is particularly worth brief attention here. The issues that dominate his analysis are (i) whether the SVC is a single constituent, (ii) whether it coordinates or embeds verbs, and (iii) whether it is capable of unitary analysis. Sebba sets out four distinctive characteristics of SVCs, namely, (i) each component verb must be a full lexical verb, (ii) each component verb is subject to the same tense-aspect interpretation, (iii) there is no ascertainable clause boundary, and (iv) there is no overt conjunctive element. (iii) he restates to mean the SVC is "monoclausal", and in interpreting him it is important to realise he wants to include such examples as (6.7) within this definition, which is not without a plausible clause boundary.

(6.7)

lon go teki a buku tyari go gi a leriman
run go take the book carry go give the teacher
'Run and give the book to the teacher.'

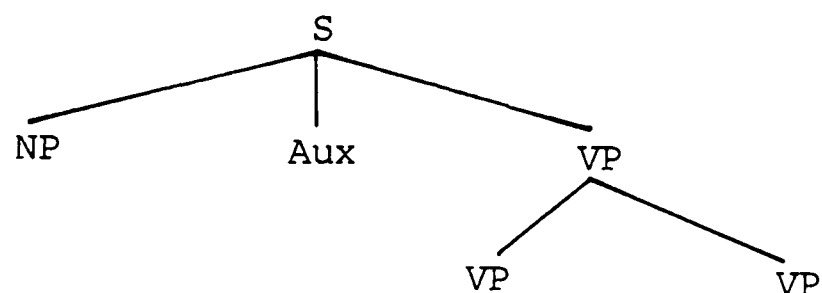
[Sebba, 1987:40]

Sebba proposes a non-unitary solution having both coordinate and subordinate SVCs, which categorially are VPs. The former dist-

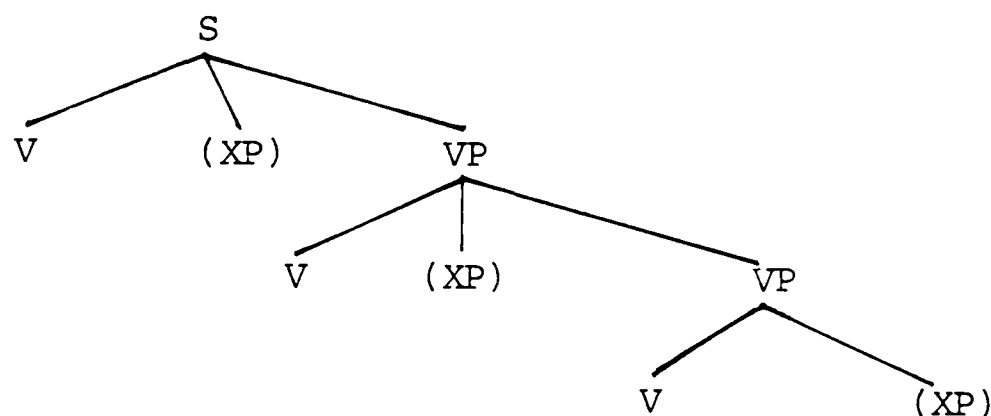
inctively refer to multiple actions, the latter to a single action, and both are motivated syntactically by the usual sorts of evidence, such as movement of constituents, etc. The following two structures are proposed by him:

(6.8)

a. coordinate SVCs



b. subordinate SVCs



where X = N or P

Grammatical relations are assigned on the basis of configuration (Sebba, 1987:129f), in which one argument in a specific configuration (c-command) is permitted in the syntax to be argument to two verb-functors at the same time. To constrain cooccurrence of the various lexical items, Sebba postulates several HEAD features for particular verbs, [DIR]ectional, [MOD]ifying, [LOC]ational, [CHANGE] and [RESULT]. In the model-theoretic semantics which he adopts, he proposes different type assignments which he assumes to be associated with particular lexical components of the SVC, paralleling each type to a functionally equivalent English preposition.

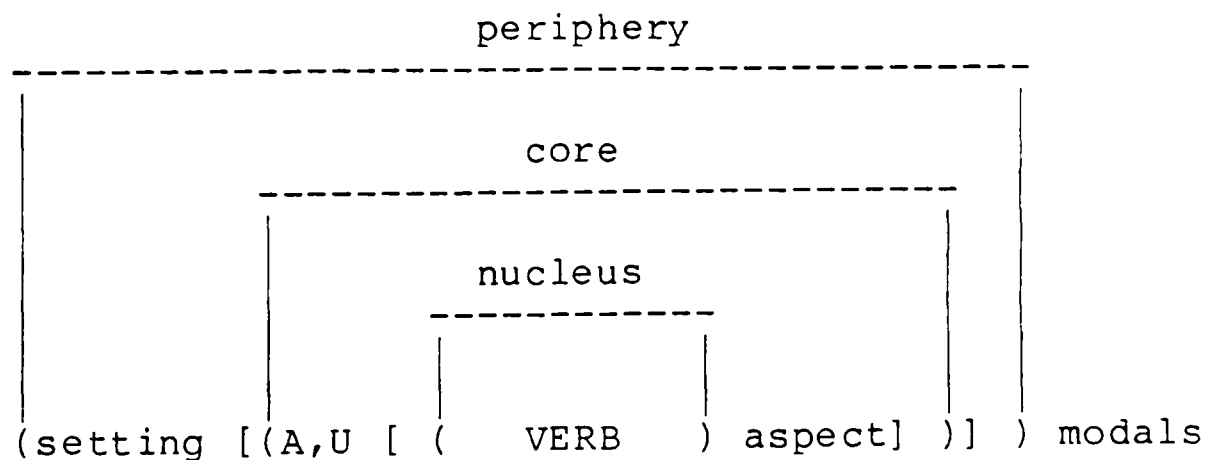
Unfortunately, he does not make any reference to the clause

chaining phenomenon, and, in spite of setting up his coordinate type, he does not pursue the discussion with longer examples. If he had, he may not have adhered to his criterion of unascertainable clause boundaries.

6.1.2.4. Foley, Olson and van Valin.

Foley & Olson(1985) approach the problem from a quite different perspective. In their version of functional grammar, Role and Reference Grammar (RRG) they propound the concept of "clause layering", in which three layers, corresponding to nuclear, core, and peripheral syntactic units are proposed, each layer being more inclusive than the previous, and each having a set of operators (in the normal logician's sense of that word) which are not constituents of that layer, but have it as the domain of their scope. The following diagram illustrates their summary of clause structure (op.cit. p.38).

(6.9)



Here A = Actor, and U = Undergoer. Their nuclear operators they term aspectuals, core operators are setting, and peripheral operators are modals; I will not further define these here.

In languages which contain SVCs, RRG distinguishes these three clause layers, postulating junctures at each layer on the basis of evidence such as the following:

(6.10)

a. mo mú ìwé; mo sì wá ilé [Stahlke; Yoruba]

I took book I and came home

'I took the book and I came home.'

b. mo mú ìwé wá ilé [Stahlke; Yoruba]

I took book come home

'I brought a book home.'

c. fu fase fi isoe [Olson, 1981; Barai]

he letter sit write

'He sat writing a letter.'

d. fu fi fase isoe [Olson, 1981; Barai]

he sit letter write

'He sat down and wrote a letter.'

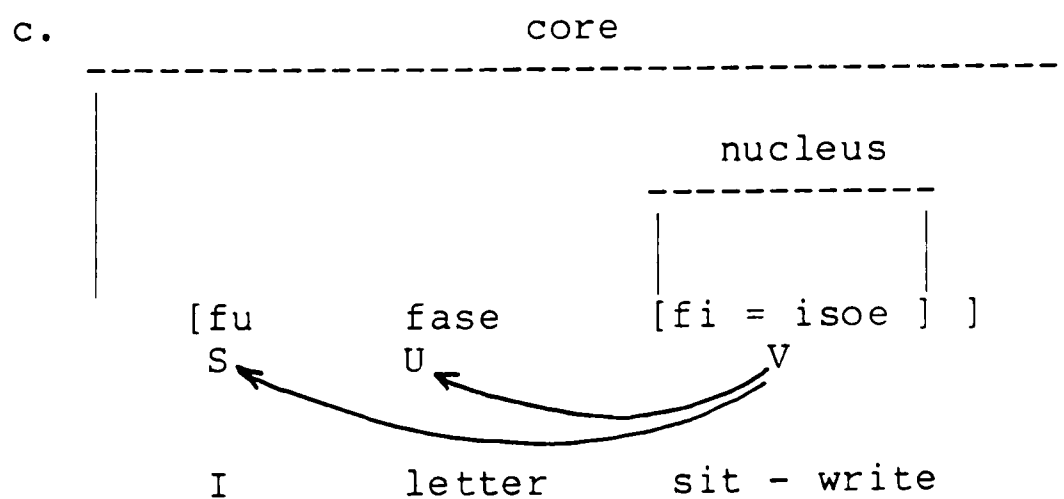
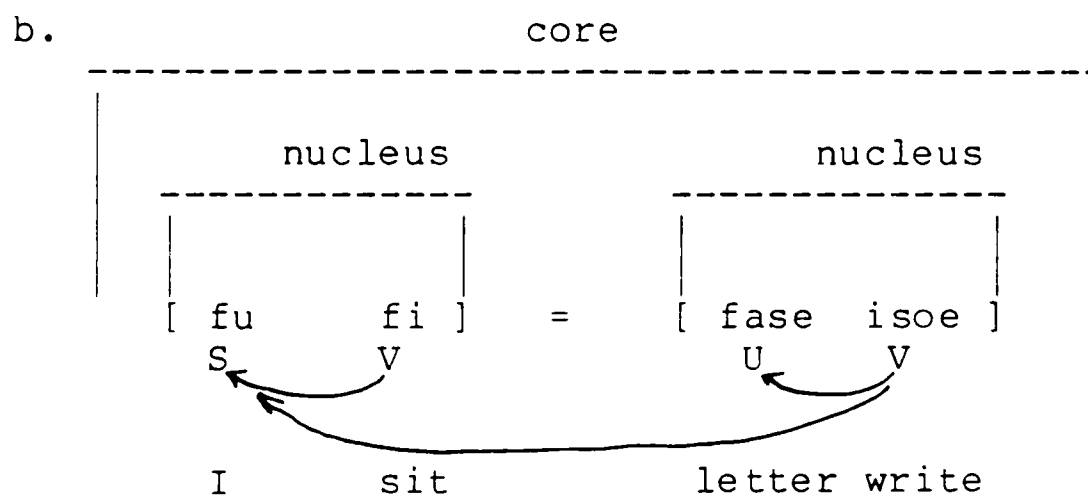
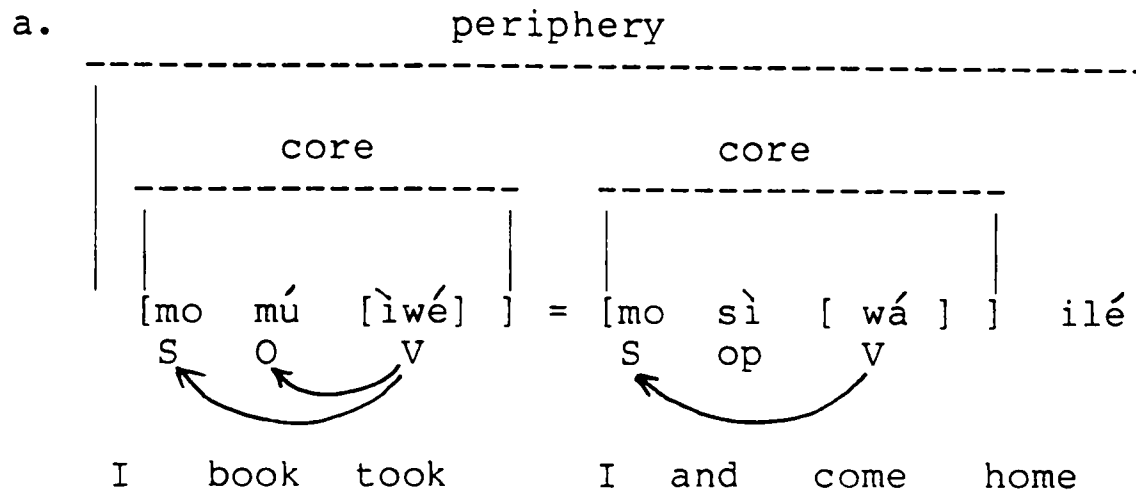
Notice that (6.10a) contains an overt conjunction, and that it can be followed in conversation by a sentence expressing '... but I forgot to bring it along.' There is repetition of the subject NP mo 'I', and the first clause NP ìwé 'book' is not associated with the second verb, ilé; two distinct events are in view. This contrasts with the single (complex) event expressed in (6.10b), where the subject is constrained to a single NP which acts as subject to both verbs; there is no conjunction, and the book is brought home -- so (6.10b) cannot be followed by the sentence expressing '... but I forgot to bring it along.' This exemplifies their peripheral juncture, which is not a serial construction.

(6.10d) exemplifies serialisation at the core juncture, being interpreted as two separate activities, 'sitting' and 'writing.' There is one subject, or rather, Actor for both verbs. (6.10c) shares not only subject, but object, or Undergoer also, and a single (complex) activity is portrayed.

(6.10b) and (6.10c) are both analysed as nuclear junctures. These various decisions are motivated by consideration of

various operators, also, and their outcome is the establishment of three levels of juncture which may be diagrammed thus:

(6.11)

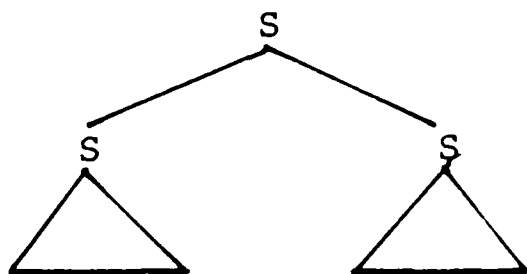


Because their notation is not a notational equivalent of most standard (generative) grammars, it is necessary to exert caution

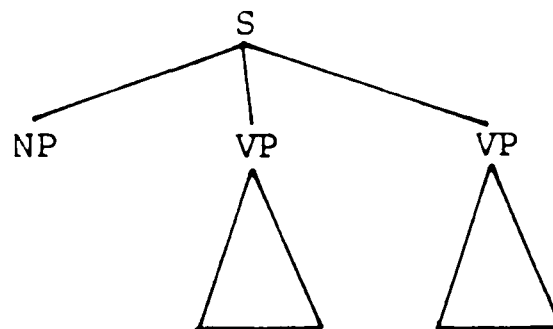
in re-interpreting RRG structures here.² In more usual phrase structure terms, however, what they are postulating is roughly equivalent to the following three trees, parallel to (6.11a,b,c) above.

(6.12)

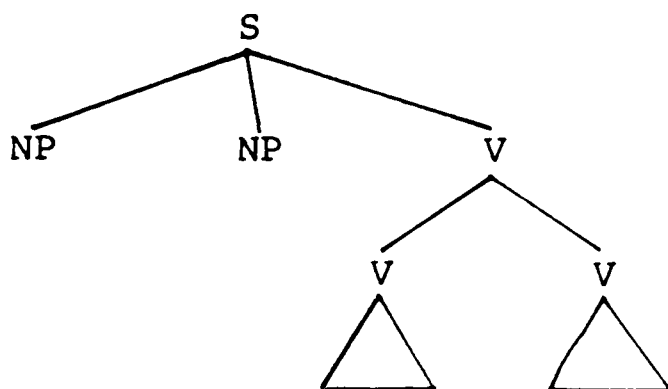
a. coordinate Ss



b. coordinate VPs



c. coordinate Vs



In short, RRG eschews a subordinate analysis, viewing serialisation as mono-clausal, and coordinative at three constituent levels: sentence, verb phrase, and verb.³ In HPSG terms, it therefore is a phenomenon applying to a natural class of categories: $V[\text{SUBCAT}\{\ \}]\text{, } V[\text{SUBCAT}\{\text{NP}\}]\text{, } V[\text{SUBCAT}\{\dots\text{NP},\text{NP}\}]\text{.}$

2. Substantive notational non-equivalences include the following: Their two core arguments are not differentially defined with respect to V, as are subject and object in most treatments; their operators are treated in a predicate calculus sense, rather than as syntactic (sub)constituents; other arguments than the core ones belong to the periphery, not the core of the clause, whereas most models would allow some instances of these to be complements which the verb subcategorises-for.

One of the attractions of Foley & Olson's approach is that it leads readily to a principled hypothesis about conjoining constructions across the continuum. Narrowly defined SVCs, which involve valence expansion, exhibit nuclear juncture; a broader conception exhibits core juncture; and overt coordination exemplifies peripheral juncture.

6.1.2.5. Comparison of analyses.

Stahlke(1970) is one of the few who approaches the suggestion that SVCs may be coordinate Vs, in his suggestion that lexical incorporation processes may go some way to 'explaining' serialisation, which I interpret to mean the setting up of compound verbs, but he isn't more explicit than that.

A further important feature of the work of RRG is that it offers a principled partial account of the 'shared' NPs noted above as a characteristic of the SVC. For example, in their coordinate-V variety the verb-complex might be viewed as a single functor, with a set number of arguments. These workers are not committed to a view of language as a function-argument mapping, and are quite open about the possibility of one argument being simultaneously the argument of two predicates, see Foley & van Valin (1984:194). This is of interest in analysing the so-called causative type of serial, in which the object of V_1 is subject of V_2 , as seen below in (6.18).

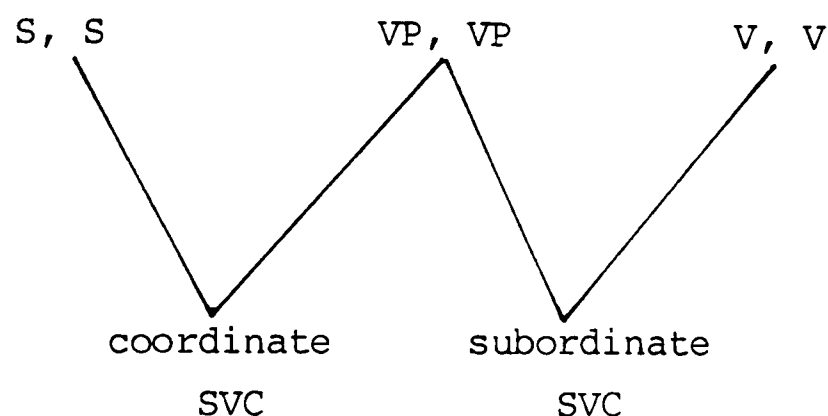
There is no one-to-one correspondence between the analysis RRG sets out and Sebba's, the situation is more as in (6.13), where Sebba's coordinate kind seems to correspond to both periphery and core junctures, and Sebba's subordinate kind seem to correspond to both core and nuclear kinds.

3. Of course, that is not to imply RRG never allows subordination, which would be absurd. In fact its proponents set up three kinds of predicate nexus: coordinate, subordinate, and cosubordinate (their term), and in theory permit any combination of periphery, core and nucleus, giving nine types.

(6.13)

RRG

periphery	core	nuclear
(not SVC)	SVC	SVC



Sebba

It will be important in any further attempt to analyse the phenomenon to compare these two solutions, and ask whether, and how the differences can be resolved. That cannot be undertaken here, since it will require additional data to test one against the other. All I will attempt is to review several of Sebba's example sentences, and consider possible re-analysis according to the RRG schema. Consider first,

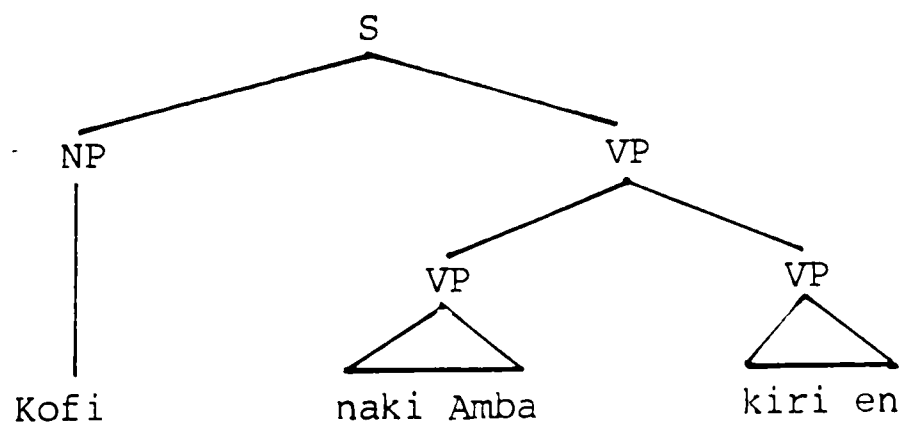
(6.14)

Kofi naki Amba kiri en	coordinate type
Kofi hit Amba kill him/her	(Sebba, 1987:109)
'Kofi struck Amba and killed her.'	

Sebba assigns the structure in (6.15a), and RRG would, I assume, assign a structure such as (6.15b).

(6.15)

a.



b.

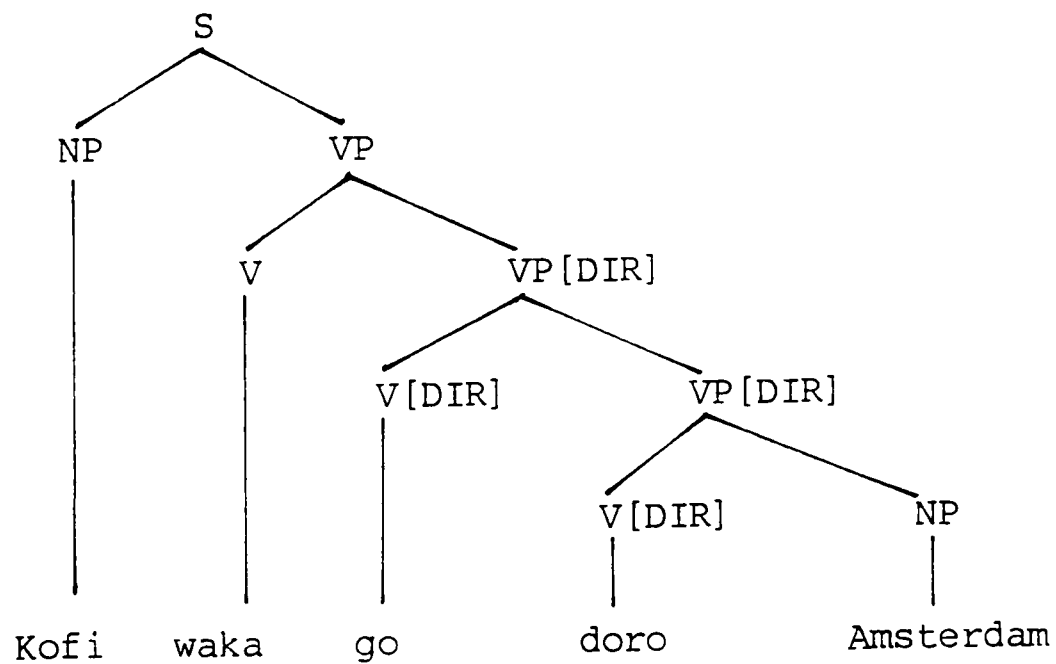
[illegible]

These are equivalent structures, both postulating coordinate VPs. Consider next a sentence that Sebba analyses as a subordinate type, and assigns the structure in (6.16b).

$$(6.16)$$


- a. Kofi waka go doro Damsko subordinate type
Kofi walk go reach Amsterdam Sebba(1987:118)
'Kofi walks to Amsterdam' ie. all the way

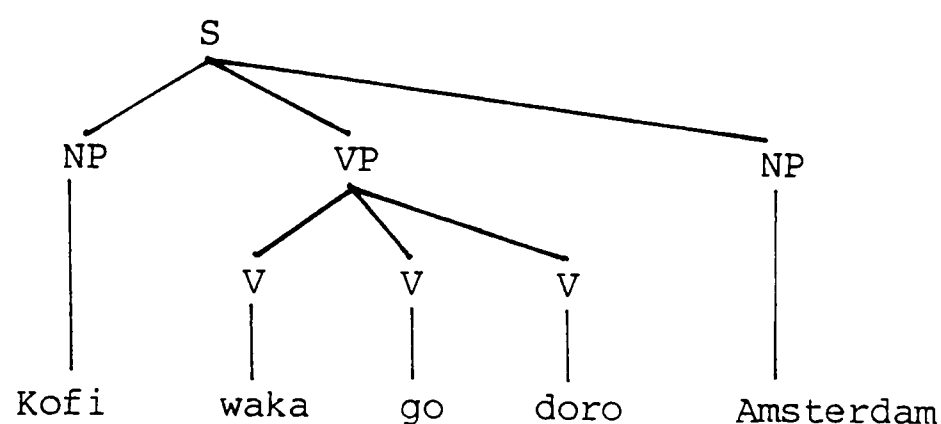
b.




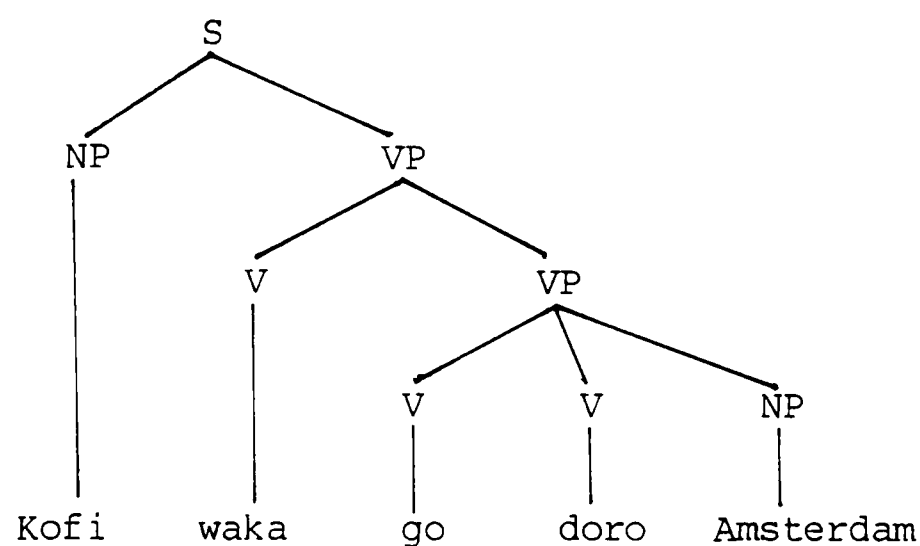
An RRG analysis would suggest either (6.17a), or (6.17b), Since the RRG formula is not a configurational one. it is not clear which node the goal NP should come under.

(6.17)

a. [Kofi [waka = go = doro] Amsterdam]




b. [Kofi [waka] = [go = doro] Amsterdam]




Sebba here opts for two layers of subordination under his highest VP node, whereas (6.17a) proposes a coordinate V structure. Sebba's Sranan data exhibits a number of cooccurring verbs, like go doro 'go-reach', waka kon 'walk-come', fadon kon 'fall-come', fadon naki, 'fall-hit' that are plausibly closer-knit than his analysis suggests, and a coordinate V analysis needs clearly ruling out.

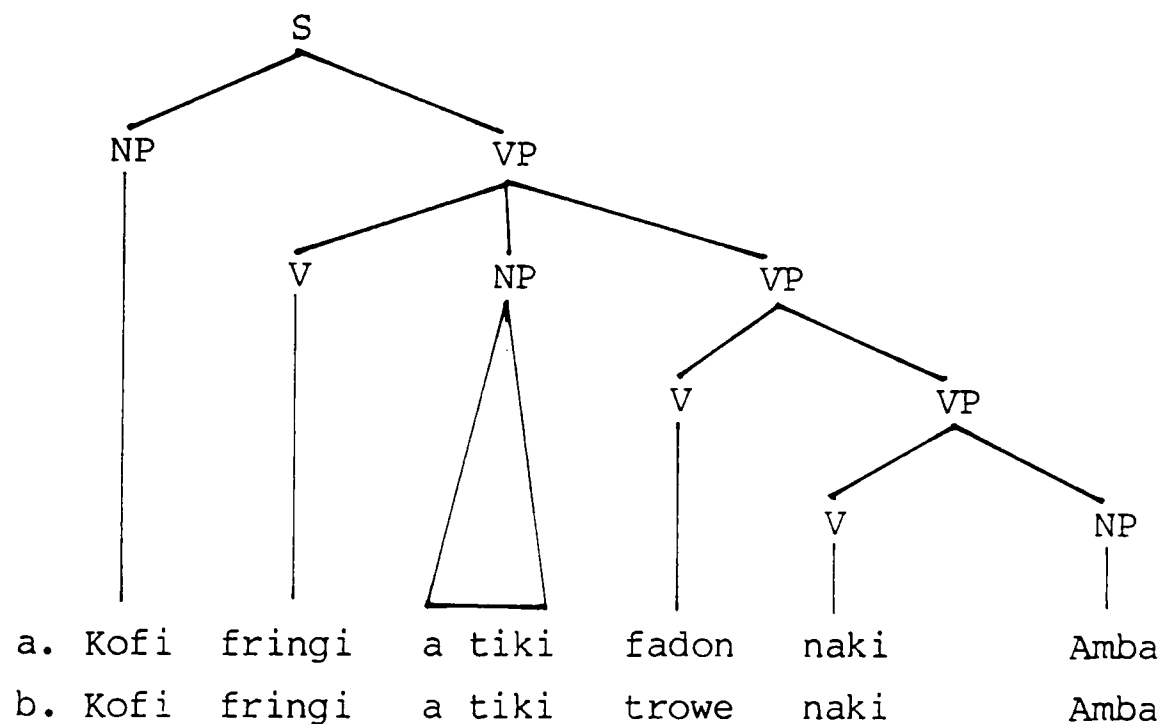
As a third example, consider a sentence such as the following, in which an NP intervenes between V_1 and V_2 .

(6.18)

- a. Kofi fringi a tiki fadon naki Amba (Sebba:1987:115)
 Kofi throw the stick fall hit Amba
 'Kofi threw the stick at Amba' (and hit her)

- b. Kofi fringi a tiki trowe naki Amba (Sebba:1987:115)
 Kofi throw the stick throw hit Amba
 'Kofi threw the stick at Amba' (and hit her)

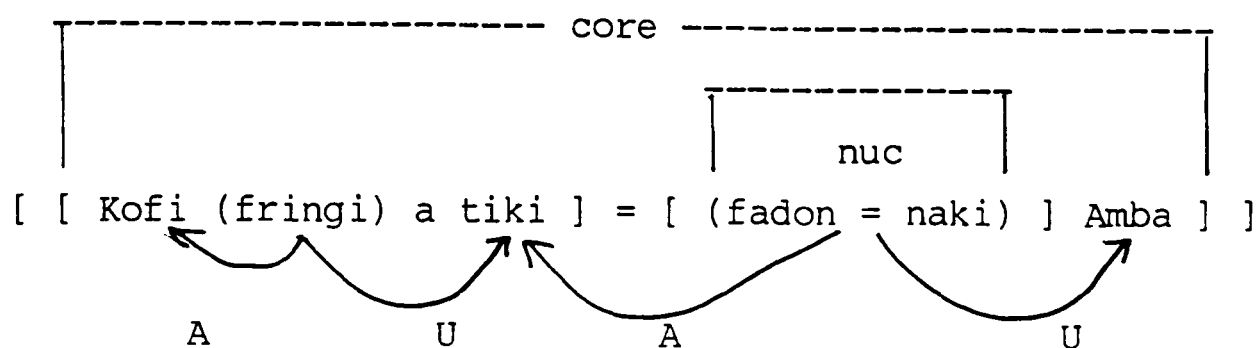
(6.19)



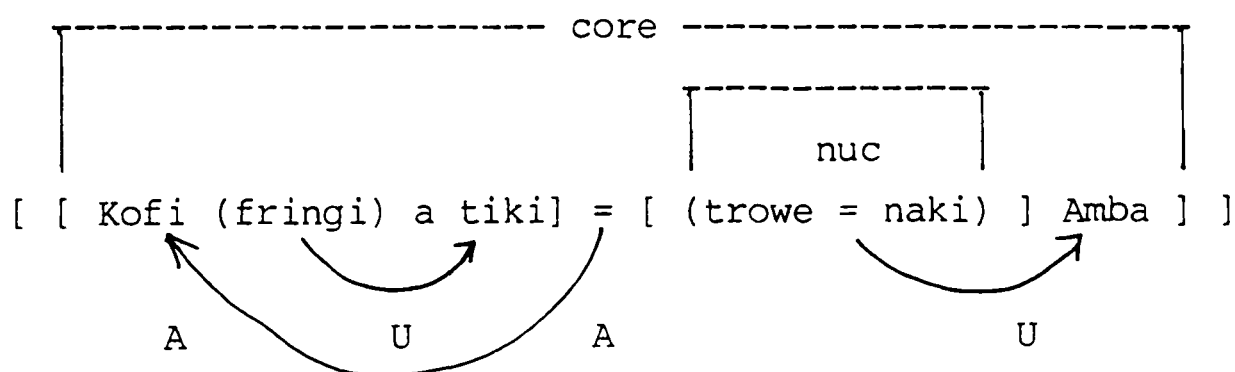
In both (a) and (b) sentences, a tiki is the configurationally defined object of the transitive verbs fringi, and naki. In (a) a tiki is also the configurationally defined subject of the intransitive verb fadon, whereas, in (b) the transitive verb trowe has the configurationally defined subject Kofi. Sebba uses the c-command relation here to define subject and object, as well as lexical information concerning subcategorisation. RRG treats these two as follows:

(6.20)

- a. Kofi fringi a tiki fadon naki Amba (Sebba:1987:115)
 Kofi throw the stick fall hit Amba
 'Kofi threw the stick at Amba' (and hit her)

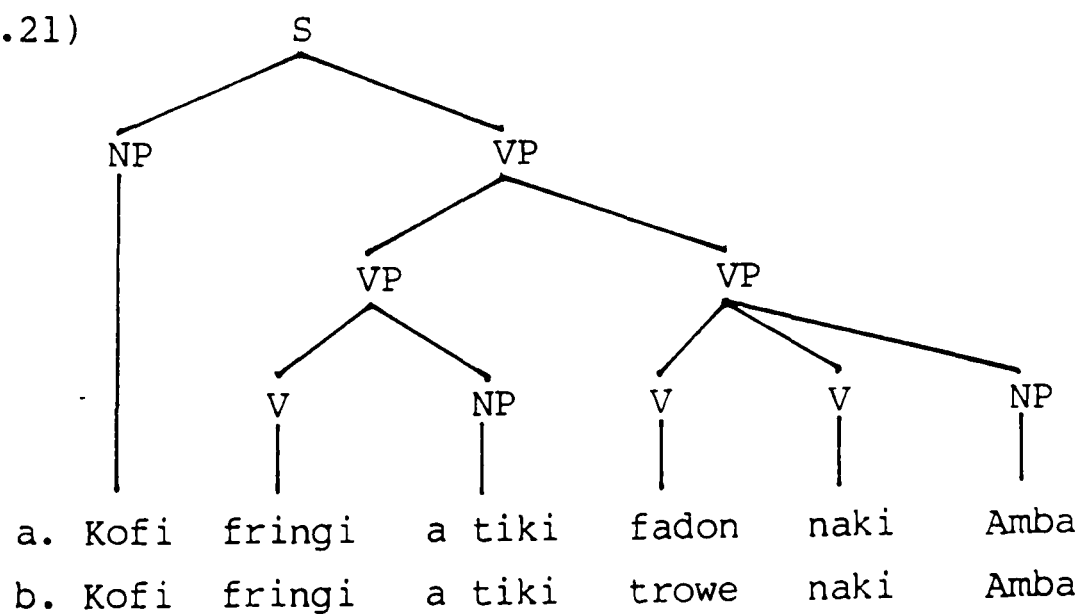


- b. Kofi fringi a tiki trowe naki Amba (Sebba:1987:115)
 Kofi throw the stick throw hit Amba
 'Kofi threw the stick at Amba' (and hit her)



Thus,

(6.21)



In RRG, grammatical relations are not configurationally defined, and the above offers an alternative to Sebba's attempts to achieve this in terms of c-command. Indeed, RRG operates with the primitives Actor and Undergoer, which are of course semantic rather than syntactic notions, so that defining an argument as a term of more than one functor is not a matter of syntax. Perhaps this is the most dubious feature of Sebba's proposal, although that he never considers a coordinate-V structure is certainly a second weakness. Merely to translate from one to the other notation is of course, inadequate without carefully evaluated empirical justification of one over the other, which cannot be attempted here. The above should, however, be sufficient to suggest the need for a re-assessment of Sebba's position in the light of the strong claim of RRG proponents that SVCs should be analysed as coordinate structures at three constituent levels.

As noted in 6.1.1, some clause chains at least ought to be analysed as serialisation, and I turn now to consider the comparable construction in Hadiyya.

6.1.3. The SVC in Hadiyya.

In the Ethiopic language area, Cohen(1970:151) presents what is essentially clause chaining in Amharic; see also Gasser(1983) and Givon(1983b). Hayward (1976:139f) hints at a structure in 'Afar, (Lowland East Cushitic) which may be similar. Indeed, I anticipate that many languages of the area will be found to exhibit the phenomenon. As already noted, Hetzron(1970:346ff) however, referring to Stahlke, asserts that Amharic is not a serialising language. Whether Hadiyya exhibits what is essentially the serialising phenomenon will be the topic of the following subsections.

6.1.3.1. The Hadiyya Data.

The Hadiyya sentence type that might justifiably be considered a candidate SVC consists of a single NP subject for all verbs in a

string, and the string of verbs may or may not be accompanied by complements. In addition, all verbs except the last are in medial form, [MED], and the last in final form, [FNL]. Recall, as detailed in 2.3.6, that medial and final refer to the position of the constituent in the sentence, and so categorise syntactic dependence and independence (to be distinguished in 6.1.3.4 from subordination and coordination) respectively. For example,

(6.22)

- a. meenticco giira giitta2a,
 woman fire kindling,

gii2l gadanonne lobakat ammane afuutto2o
 fire's beside much time she-sat

'Having kindled a fire, the woman sat beside it for
 a long time.'

- b. manc heda aa2aa, u2lum t'ufa app'isaa, iik'ukko
 man axe taking, door striking, he-split
 'Taking an axe, striking the door, the man split (it)'

The verb forms giitta2a in (6.22a) and aa2aa, app'isaa in (6.22b) are medial converb₁ forms; afuutto2o and iik'ukko are final. It is the status of these converbs in the sentence that will be explored here.

6.1.3.2. Uses of CONVERB₁.

(1). The Past Perfect.

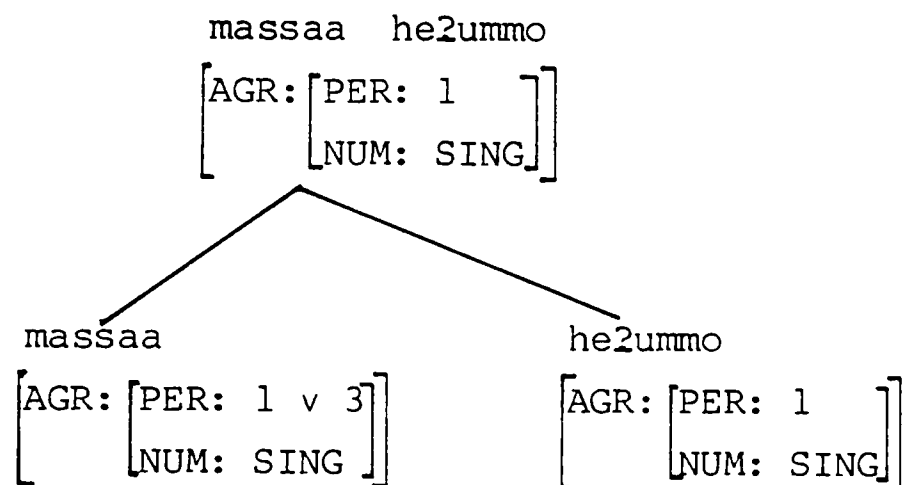
Here converb₁ is completed by the auxiliary he2- 'be, live', (both converb and auxiliary carrying the same agreement features, and the auxiliary in final form) as mentioned in 2.3.6.

(6.23)

... mat'aafa massaa he2ummo
 book taking I-was
 'I had taken a book'

Note that massaa in itself is ambiguous, being 1sg or 3ms formally; here it is unambiguously 1sg, since the auxiliary is 1sg.

(6.24)



(2). Adverbial use.

Hadiyya has few true adverbs. Apart from lobakata 'greatly', a few are formed from adjectives by the suffix -(i)sa, for example, jorisa 'badly', from jora 'bad'; erisa 'well' from er 'good.' But typically the adverbial is a modifying verb, in *Converb₁* form, and carrying the same agreement features as the following verb, which it modifies.

(6.25)

gaassaa bat' beyyo waarukko
 preceeding/3ms work-place he-came
 'He came first to work' (ie. before others)

(6.26).

... k'app'-itaa mattootto
 being slow/2s/ you-will-go
 'You will go slowly/carefully.'

(3). Aspectual use.

A few verbs function aspectually, with scope over the preceding verb, viz. ki2- 'rise' (= after); and its causative ki2is- 'raise'; ur- 'leave/depart' (= stop/quit); guull- 'finish' (= complete); amad- 'grasp' (= start). In the following examples, note the repetition of this usage around the peak of the tale, providing in the repetitiveness a heavy deliberateness which contrasts well with the closure in each sentence.

(6.27)

dabassanta2a ki2la2a, lamim amatt'ita2a ki2la2a, googoom
 exchanging rising both taking after the-road

mattakko2o yakkamo. matta2a ki2la2a, tocconne
 they-went one-says. going rising at-side

fissita2a ki2la2a, fook'a2lam ammane, marabo
 taking-out rising opened time honey

massukkaannik oreeta; buuro massukkaannik bucca!
 one-who-took dung; butter one-who-took earth!

lamim mo2la2a ki2la2a, hoogga2a ki2la2a, muunnita2a
 both seeing rising weakening rising howling

utta2a, lamim min mine matto2o yakkamo. ...
 quitting both house house they-went one-says. ...

'After they traded, they took (their goods) and went on their way, it is said. After going, they took it out at the side (of the road), and the one who took honey -- dung; he who took butter -- earth. The two, afterseeing, after being deflated, stopped howling about it and went to their separate houses, it is said. ...'

[Two Cheats]

Note the occurrence of muunnita2a utta2a 'stopping howling' also, and the following additional examples.

$$(6.28)$$

- a. ... itaa ki2aa/ki2ukko
eating rising/he-rose
'having eaten, rising' or 'after eating'
- b. ... losan uwwamaa ki2aa beeddaa ...
teaching being given rising finishing
'.. after the teaching being given is completed'
[Announcements]
- c. uggaatoomim c'oggaa beeddoo ammane ..
curd-ANA-& draining finished time
'And when that curd finishes draining ...'
[Preparing Cheese]

An aspectual form such as ki2aa has the same effect semantically as the conjunction lasage 'after' (see 5.1.2.1), except that the latter clearly subordinates a clause. Thus we can find:

$$(6.29)$$

- a. meenticco giira giitta2a gii2l gadanonne afuutto2o
b. giitta2a ki2la2a
c. giitta2a lasage
d. * giitta2a ki2la2a lasage

'Having kindled a fire, the woman sat beside it'

(6.29a) is a straightforward SVC, as is (6.29b), which however, clarifies the completion of the event giitta2a by the aspectual ki2la2a, 3fs of Converb₁. In both cases, clauses having the converb₁ form remain on the event-line of the discourse. (6.29c) contrasts with these, in that the action of kindling is now subordinated to the final clause gii2l gadanonne afuutto2o, 'she-sat beside the fire.' The subordinate clause is off the theme-line, and as a result is no longer subject to a same-subject constraint with respect to the following verb. For example, compare (6.29c) with (6.30) below, where the presence of *lasage* frees the sentence from a coreferential subject con-

straint concomitant with subordinating the first clause.
(6.29d) strains acceptability towards the overly pedantic.

(6.30)

meenticco giira giitta2a lasage, is manc gii2l
woman fire kindling/3fs/ after, her man fire

gadanonne lobakat ammane afuurukko
beside much time he-sat

'After the woman kindled the fire, her husband sat
beside it a long time'

Other conjunctions, such as ammane etc. have been dealt with in 5.1.2.1. Note also that we can substitute case-marked verbs for the medial forms: giitta2aaniins [ABL] 'from her kindling'.

(4). Clause Chaining.

The above formation of the Past Perfect, Adverbial and Aspectual usages can all legitimately be subsumed under the SVC; but the latter entails far more than this. By far the largest category of usage of the Converb₁ is in sentences where a sequence of events, actions, states or processes are strung together, and it is this phenomenon that sets apart the SVC as a major sentence structure in Hadiyya. For examples, see (6.27) and the texts in Appendix III.

6.1.3.3. Summary Characteristics.

We note the following distinctives of the SVC in Hadiyya.

1. The verbs in SVC must have the same referential subject.
2. The verbs are in chronological sequence. To permute the order of verbs at best changes the meaning, at worst may result in nonsense.
3. There is only one subject NP in the sentence, nor

can resumptive PRO-forms occur. All verbs, of course, carry the same agreement features.

4. The subject NP can occur in any clause in the chain, but most frequently before the initial or final verb.

5. All verbs in the SVC except the sentence final verb, occur in Converb₁ form.

6. The tense-aspect of the SVC is governed by that of the verb in final form, as is mood or illocutionary force (indicative, imperative, negative, interrogative).

7. Strings of converbs can occur without intervening NPs, especially in oral (vs written) discourse.

8. There is no conjunction, or any other overt signal of either coordination or subordination, and none is permitted.

These distinctives will be considered in turn.

(1). The Same-Subject Constraint.

While a sentence such as (6.31) below may occasionally be acceptable, this is typically realised differently (see Switch Reference), and the SVC is under a same-subject constraint.

(6.31)

*meenticco giira giitta2a, gii2l gadanonne
 woman fire kindling/3fs/, fire's beside

lobakat ammane is manc afuurukko
 much time her man he-sat/3ms/

'The woman having kindled a fire, her husband sat
 beside it a long time'

It is the change in subject reference, and hence in agreement features, that makes (6.31) no more than marginally grammatical. It is clear from the following example, however, that 'same subject' is capable of some latitude in interpretation. The

constraint here is apparently, that the speaker finishes by including himself within the group previously referred to in the 3rd person.

(6.32)

... Betakristaananne, siiddamoo ama2naan hundinam ihaakko
in the Church, who-find believers for-all which-is

losan	uwwamaa	ki2aa	beeddaa	min	mine
teaching	being-given	rising	finishing	house	house
	3ms	3ms	3ms		

annann	inkaa	malloommo
separate	becoming	we-will-go
	1pl	1pl

'... in the Church, after teaching is given to all
believers who find (it) we will go separately to our
homes.'

[Announcements]

For other evidence that proper inclusion is criterial to the establishment of (non-)coreference, see 5.2.2 and 6.2.

(2). Chronological Sequence.

Permuting the verbs affects the meaning of a sentence.

(6.33)

meenticco	gii2l	gadanonne	afuutta2a,	giira	giitto2o
woman	fire's	beside	sitting,	fire	she-kindled

'Having sat beside the fire, the woman kindled it'

This has the reading implied by the English gloss, that the woman sat beside an unlit fire, later kindling it.

(3). Single Subject NP.

More than one subject NP in the sentence makes it ungrammatical.
Thus:

(6.34)

(*manc) heda aa2aa, (*itt') u2lum t'ufa app'isaa,
man axe taking/3ms/ he doorway striking/3ms/

(*itt') iik'ukko
he he-split

'Taking an axe, and striking the door, the man split it'

Read this to mean that with any one of the bracketed constituents the sentence is grammatical; with any two, or all three, it is ungrammatical. Note that many of the languages for which a serial verb construction is reported are isolating languages, but Hadiyya is an inflecting language, and subject agreement is carried through on the verbs. This is typical of clause chaining languages.

(4). Position of the Subject NP.

The grammatical subject may occur before any verb.

(6.35)

- a. manc heda aa2aa, u2lum t'ufa app'isaa, iik'ukko
- b. heda aa2aa, manc u2lum t'ufa app'isaa, iik'ukko
- c. heda aa2aa, u2lum t'ufa app'isaa, manc iik'ukko

These three sentences are completely synonymous, but not equally felicitous in isolation, however, in which case (6.35a) is strongly preferred, and (6.35b) least preferred. The following examples are from text, and demonstrate thoroughly the freedom of ordering for the NP subject.

(6.36)

a. -- initial position.

ee ammane k'amacc waarimma sabaa c'awwaa
 that time monkey to-come refusing continuing

lasonne gataa c'awwukko
 at-back remaining he-was-silent

'At that time, monkey continued refusing to come and
 remained silently at the back.'

[Judgement of the Animals]

b. -- medial position.

ee ammane foo2lukkisa la2aa ki2aa oo hobbicc
 that time that she-opened knowing rising that lion

goticcina "egedu beyyiins wo2o eebe" yaa
 to-hyena " ... place-from water bring" saying

goticco asse2ukko
 hyena he-sent

'When he knew at that time that she was opening, that
 lion sent the hyena, saying to him "bring water from
 the ... place".' [Judgement of the Animals]

c. -- final position.

waaroo uraa "haniins laso waattoottok?"
 coming stopping "from where back is-it-you-come?"

yaa hobbic t'a2mukko
 saying lion asked

'Stopping coming, "From behind what are you coming?"
 saying, the lion asked.' [Judgement of the Animals]

These natural discourse examples should adequately confirm the
 freedom of the subject position in the sentence.

(5). Verb Forms.

The essence of the construction in Hadiyya is a string of CV₁[MED] verb forms, terminating in a V[FNL] form. The form of Converb₁ and V[FNL] FORMS is dealt with in 2.3.2.1.

(6). Tense, Aspect and Mood.

This is determined purely from the final verb. Consider the following example.

(6.37)

- | | | |
|----|---|---------------|
| a. | manc heda aa2aa, u2lum t'ufa app'isaa, iik'ukko | |
| | | PERFECT |
| b. | | iik'ookko |
| | | IMPERFECT |
| c. | | iik'ona |
| | | JUSSIVE |
| d. | | iik'ukkonihe? |
| | | PERFECT, |
| | | INTERROGATIVE |

'The man taking the axe, hitting the door and ... '

The meanings of these are constrained by the final verb: 'he split... ' (past), 'he will split... ', 'let him split... ', and 'did he split... ?' respectively. Thus, while the Converb₁ formally resembles the Present Perfect paradigm, in its incorporation of a long aa aspectual vowel, and the two are almost certainly related derivationally, it has no tense-aspect of its own when used in a clause chain. There is no way within the SVC of signalling that certain earlier verbs refer to events or processes completed in past time, and that following verbs refer to a different, or later time. The SVC stands as a unit temporally, with tense-aspect, mood (interrogative and imperative forms), and negativity defined on the final verb with scope over the complete clause chain.

(7). Verb Chaining.

Strings of verbs without any intervening NP complements are common, as the following examples from text illustrate. This is such a striking construction that I will take time to give a number of illustrative examples.

(6.38)

... Betakristaananne, siiddamoo ama2naan hundinam ihaakko
 in the Church, who-find believers for-all which-is
 losan uwwamaa ki2aa beeddaa ...
 teaching being-given rising finishing

'... in the Church, after teaching is given to all
 believers who find (it) ...' (ie. find the rural
 Church in question) [Announcements]

uwwamaa ki2aa beeddaa is a string of three CV₁[MED]. In this case, ki2aa and beeddaa aspectually modify uwwamaa, rather labouring the "after it is finished" aspect. Both of these verbs are monadic, so no intervening NP is likely.

(6.39)

... oo k'aroo aa2aa manc massaa ki2aa karaa dissaakko
 that giving taking man taking rising tying he-put-
 -birth down
 '... that man who received it to bear (interest) took
 it, tied it (in a sack), and put it aside'
 [The Money that Didn't Bear]

This is from a short fable, about a man who gave a sum of money over to another, that it might bear interest - there is a play on the word 'give birth'. The above sentence records what the man who received it did with the money. Here there is a chain of three Converb₁ forms, massaa ki2aa karaa completed by a final verb, dissaakko, all of which are 3ms. massaa and karaa are transitive, without the object of either being expressed

('money' and 'rope' respectively). Notice also, the relative clause, the first of whose two verbal forms is an Imperfect Subordinate form, k'aroo, with a purposive reading, followed by a Converb₁, aa2aa. Consider a further example:

(6.40)

... uulla abuullaakka wit'aa kaasaa mine bat'aa ...
 land cultivating sowing planting house building
 '.. ploughing the land, sowing, planting, building a
 house ..'

[About Agriculture in Hadiyya Country]

Here the string of medial forms is abuullaakka wit'aa kaasaa mine bat'aa, with only the noun mine 'house' intervening. All converbs are transitive; the object of abuull- is uulla 'field', of wit'aa it is sire2e 'seed', also perhaps with uullanne 'on the field'[LOC]; kaasaa requires an object such as weesa 'insete-plant', and the object of bat'aa is expressed in the word mine 'house'. The final -kka on the first Converb₁ is optional, specifically marking the verb as 3rd person masculine; without this the verb form -- though not the sentence -- is ambiguously 1st singular or 3rd masculine singular. Note that the formative -kka is involved in the identification of a switch reference subject, see below section 6.2.3.3.1.

(6.41)

lamim mo2la2a ki2la2a hooga2la2a ki2la2a muunita2a
 &-both seeing rising tiring rising moaning

utta2a min mine matto2o yakkamo.
 leaving house house they-went it-is-said

'And the two, after seeing that, after tiring out, quit
 moaning, and went each to his house, it is said.'

[The Two Cheats]

The verb forms concerned here are all 3fs, used as plural. The striking thing here is the three times use of an aspectual

converb₁ (ki2- and ur-), giving a chain of six medial verbs in the SVC, thus, moo2la2a ki2la2a hooga2la2a ki2la2a muunita2a utta2a. Note in passing the embedded syntactically independent sentence ending in matto2o, with the superordinate yakkamo, having unspecified 3rd person subject. Finally, consider the following.

(6.42)

... t'issuta2n, niyumma loro2o feerakka2a
if-he-gets-sick, our-mother Loro-fruit picking,

eebakka2a do2isakka2a ki2akka2a t'ok'isakka2a,
bringing, turning-over rising bursting-open,

miinenne issakku2uyy ...
on-forehead while-putting

'... if he/we get sick, our mother picks, brings loro
fruit, and turning it over, bursts it by putting it on
the forehead ...' (ie. explaining a traditional cure)
[A Sermon on Penitence]

Here we find a chain of five Converb₁, feerakka2a eebakka2a do2isakka2a ki2akka2a t'ok'isakka2a, of which only the fourth, ki2akka2a, carries aspectual force. The others are transitive, all requiring the object loro2o 'Loro-fruit'. The construction t'ok'isakka2a ... issakku2uyy ties these two verbs into one simultaneous complex event with an instrumental reading -- 'bursting by putting'. The form of the verb here is 3rd person RESPECT, for mother.

From such examples, it is clear that verb chaining is a frequent and striking mechanism in Hadiyya syntax. It should also be clear how persistent is the so-called "pro-drop" of object NP, which need not denote the same entity for each verb.

(8). Absence of Conjunctive Marker.

There is no overt, non-verbal conjunctive marker present or permissible in SVCs. Hadiyya has few lexical markers of coordination within the sentence, and these are rather infrequent, and emphatic; see Chapter 4.2. Recall that canonical coordination is achieved by lengthening of final vowels, Chapter 4.1. Apart from what is said there regarding the coordination of [MED] forms, VPs are not coordinated by use of any conjunction. The long -aa vowel typical of the Converb₁ paradigm is not related to this mechanism: not all person forms do end in a long vowel. The SVC can also be contrasted with the post-verbal conjunctions of Adverbial constructions; see chapter 5.1.

6.1.3.4. Categorical status of the SVC in Hadiyya.

The question whether the SVC in Hadiyya consists of coordinated or subordinated VPs or Vs can now be addressed. Clearly from what has been said above, the SVC stands totally outside the system of subordination as this is seen in Chapter 5.1, nor do the chained clauses compare to subordinate clauses in function: one cannot be considered a modifier of some other clause, for example. At the same time, the SVC exhibits none of the typical markings of canonical coordinate constituents revealed in Chapter 4.1 either. Thus, its various constituent parts are not permutable, except with change in meaning; if the sentence final verb is considered part of the construction, then clearly it is not of the same syntactic status as the other conjuncts. On the other hand, in function, the SVC relates readily to the concept of coordination. The data illustrate that the Hadiyya SVC is functionally equivalent to English coordinate verbs. Further, the marking of tense on only one verb is paralleled by Haiman & Thompson (1984) to conjunction reduction, specifically referring to chaining languages. This is a coordinative schema, although not a close parallel in a surface-based model. Also, in text, thematic information is carried by this mechanism, see below. Note that Roberts (1988) strongly affirms coordinate rather than subordinate status for Amele, a clause chaining language of New Guinea.

Clearly, one difficulty here is that the terms coordinate and subordinate do not apply well to clause chaining data. Haiman & Thompson (op.cit), for example, suggest abandoning the notion "subordinate" in favour of a range of specific parameters, which form too disparate a list for their suggestion to be convincing. Others, struggling with a similar issue, speak of "inordinate" and "cosubordinate" status, Hamp (1973) and Foley & Olson (1985) respectively, while others postulate dichotomised solutions, in which subordinate and coordinate uses of a construction have a single syntactic surface realisation. Kuno (1973) suggests there is a continuum of distinctions between coordination and subordination.

Foley & van Valin (1985) in particular, make a good case for recognising at least a third category alongside subordinate and coordinate, from consideration of clause chaining languages. They point out that the traditional use of the term subordinate entails either embeddedness or syntactic dependence, and coordinate entails either not embedded or syntactically independent. They suggest separating these two definitive notions as follows:

(6.43)

[+ embedded, + dependent]	subordinate
[- embedded, - dependent]	coordinate
[- embedded, + dependent]	cosubordinate

So, whether a constituent is embedded or not is independent of whether it is dependent or not. The third, new category, of a non-embedded, but syntactically dependent constituent very satisfyingly meets the criteria for recognising medial verbs in Hadiyya; being medial they are dependent, but, as I argue here, they are not subordinate! A great deal of the difficulty in analysing the serial construction can be resolved when once this distinction is made. It will be obvious that there is one further categorisation possible on the basis of (6.43): [+ embedded, - dependent]. Although Foley and his co-authors do not mention this, it seems eminently suitable to describe the

quotative object of sentences having the verb 'say', and of the related sentence used in narrating fable, with a verbal tag yakkamo 'one says' following the sentential main verb. The term "cosubordinate" which they propose is a rather unsatisfying hybrid, although whether inordinate (Hamp), or a contrived "ortho-ordinate" or "iso-ordinate" is better is doubtful. See below, 6.1.5.3 for further discussion.

Stirling(1988:172ff) summarises the options neatly:

1. set up a new category
2. suspend the distinction in chaining languages
3. assign medial forms to co- or sub- ordinate
on a language specific basis.

While it is straightforward to follow (1) or (2) in descriptive work, constituent models coerce analysis along (3), in that they only permit the relations of sister and daughter, which parallel coordinate and subordinate respectively. In Hadiyya, this choice must result in the serial sentence being treated as a coordinate structure. This can be supported from the use of the structure in discourse, thus:

(6.44)

ni uullanne, kido heesso heesse2akkamo. lam manco.
our on-country, thus fable they-narrate. Two men.

mat oreetanne marabo suumenne issaa meera massukko
One on-dung honey in-mouth putting market he-took

yakkamo. mat gii2l buconne buuro issaa ki2aakka
they-say. One fire's on-earth butter putting rising

massukko yakkamo.
he-took they-say.

'In our country a fable like this is told. There were two men. One put honey on top of dung, in the mouth (of a pot), and took it to market, they say. The other put butter on top of ashes, got up and took it (to market), they say.'

[The Two Cheats]

This is the opening of a fable. It begins with an aperture sentence and a non-verbal sentence introducing the two participants. Then the action proper begins, with two serial sentences. This particular short fable contains in toto one subordinated VP, and twenty-three Converb₁ forms in nine verbal sentences. The whole action of the tale is carried forward by the SVCs.

Also, if a serial sentence is restructured into two shorter syntactic sentences, no markers of subordination appear. Rather the second sentence opens with either (i) a repetition of the final verb of S1 in Converb₁ form, occasionally (ii), with the coordinating emphatic conjunction odim 'and/also', or most usually, (iii) without any explicit marker except the particle -m, 'logical-amp'. The first of these options is illustrated below, (taken from (6.42) above):

(6.45)

... t'issuta2n, niyumma loro2o feerakka2a
if-he-gets-sick, our-mother Loro-fruit picking

eebakka2a do2isakko2o. do2isakka2a, t'ok'isakka2a,
bringing turning-over. Having-turned-over bursting-open,

miinenne issakku2uyy...
on-forehead while-putting

'... if he/we get sick, our mother picks, brings loro fruit, and turns it over. Having turned it over, she bursts it by putting it on the forehead ...' [A Sermon on Penitence]

The above points, taken together, strongly support the contention that the SVC be considered to manifest a coordinate structure, or more strictly, the structure that Foley and others have termed cosubordinate.

Is the SVC a single constituent or not? The evidence already given from the way tense-aspect-modality is marked only once and on the final verb, the coreferential subject requirement, (and perhaps topicalisation and relativisation of SVCs, although these mechanisms have not been thoroughly analysed as yet; see Appendix II) support treating SVCs as single constituents.

The further formalisation of the SVC in Hadiyya will be attempted in the following section.

6.1.4. Formalisation of the SVC.

Turning to the question of how a structural solution to the clause chaining data exhibited by Hadiyya might be formulated, two major decisions have already been argued for, namely, that it is a single constituent at some level, and that its component constituents are "cosubordinate" in status, ie. not subordinate, although not fully coordinate in the traditional use of that term. Questions remaining concern the nature of the categories so conjoined, and the exact details of how such structures might be specified and unified within HPSG. Taking this last point first, it would seem there are several broad alternatives worth considering.

6.1.4.1. Combinatorial Potential.

First, the potential for combining Vs or VPs in an SVC might be captured via an attribute within the verbal sign, by a mechanism similar to that employed for subcategorised-for or adjunctival constituents. It seems unlikely that a lexical verb in general could be held to subcategorise for a medial verb complement, since, except for adverbial and aspectual uses, there can be no selectional restriction imposed: virtually any combination of medial and final items can occur, subject only to semantic plausibility. If complements are subcategorised categories, by this criterion, serial verbs are not complements.

Whether the SVC can be accounted for as an adjunctival constituent is equally debatable. It would be disconcerting to find the on-line thematic material of a discourse to be carried by either adjunctival or complement categories; something with more head-like status is surely required; in the words of Hopper & Thompson(1980), all clauses in a clause chain are at the same level of grounding.

Both of these options assume that the potential for combination in a serialising construction is a lexical property of all verbs, and is located within the sign for the syntactically independent head of the sentence. A somewhat happier, but parallel approach would be to define a new suitable attribute; I have no persuasive idea what to call such an attribute -- let us say it is CO-HEAD, and that its value is V or VP. Whatever attribute is set up, the solution requires that rather than cancelling like a category in SUBCAT, it applies recursively to form chains of more than two verbs.

Secondly, one might envisage a language specific principle being set up, in which the final verb is defined as head, and $V[FNL] \supset [COHEAD]$. That is, the potential for combination resides not primarily in the lexical verb-sign, but in the principle. This makes use of the subsumptive ordering of the lexical inheritance hierarchy but is otherwise equivalent to the previous hypothesis. This too must apply recursively.

Thirdly, the SVC might be established by rule schema, by adopting for example, the coordination schema,

(6.46)

$$X \rightarrow [\text{CONJ } a_1]^* [\text{CONJ } a_2]$$

and establishing medial clauses as instantiations of the iteratively defined $[\text{CONJ } a_1]$. Spelled out in greater detail, (6.46) above can be rewritten in a declarative format.

(6.47) VP Coordination Schema -- first form

$$\text{SYN|LOC|HEAD|MAJ:VFORM: FNL}$$

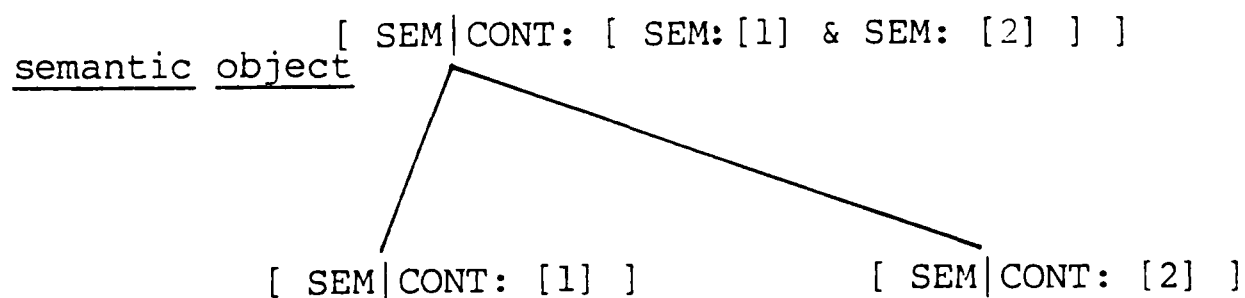
$$\text{HD-DTRS: } \left[\begin{array}{l} \text{SYN|HD: MAJ: V} \\ \text{VFORM: MED} \\ \text{T-A: CV}_1 \\ \text{AGR: [1]} \end{array} \right] * \left[\begin{array}{l} \text{SYN|HD: MAJ: V} \\ \text{VFORM: FNL} \\ \text{AGR: [1]} \end{array} \right]$$

Notice that this requires us to stipulate that the VFORM feature for the sentence has the value FNL.

To reduce the rule schema to the simple $X \rightarrow Y^*$ would require that all specific information be abstracted out of the rule, so that (6.47) be established as a principle rather than a rule. To ensure that $V[\text{MED}] < V[\text{FNL}]$ requires stating this as a linear precedence condition.

Turn now to consider the semantics in the unification of clause-chaining signs, and look first at the case of (two) coordinate clauses in a temporal chain.

(6.48)



This can be stated declaratively, and generalised to apply to a multi verb chain, as in (6.49), in which $[1]^*$ is abbreviatory for $[1] \& [2] \& [3] \& \dots$, and SEM|CONT|ROLE_1 is cross-indexed to the subcategorised subject complement to specify coreferentiality.

(6.49)

$$\left[\begin{array}{l} \text{SEM|CONT: [1]}^* \\ \text{HD-DTRS: } \left[\begin{array}{l} \text{SYN|LOC|SUBCAT: \{ \dots NP}_{[2]} \} } \\ \text{SEM|CONT: [1]: ROLE}_1: [2] \end{array} \right]^* \end{array} \right]$$

The case in which the first clause modifies the second, as in k'app'-itakka2a mattakka2a 'slowly going (2-res)' will be considered in 6.1.4.3 below.

Finally, how can the temporal implications of the SVC be described? This is perhaps an inference drawn by hearers, and capitalised upon by speakers, rather than something specifically encoded in signs. Indeed, this might be said of English and-coordinated VPs also: 'Harriet ran over to the window and took a flying leap.' It is difficult to find positive support for an inferential solution, but at least recall that each CV₁ verb in a string is formally Perfect in aspect, so that a chronological interpretation falls out naturally. If such implications are described in the sign, then it will be within the attribute REFERENCE-MARKER, see (5.37) in 5.1.5.1.

6.1.4.2. Constraining the Order of Unification.

In this section I will model the analysis of a serial sentence in some detail, paying attention now to the stage at which the coordinate SVC unifies-in vis-a-vis the other NP complements of each verb. Consider the following example.

(6.50)

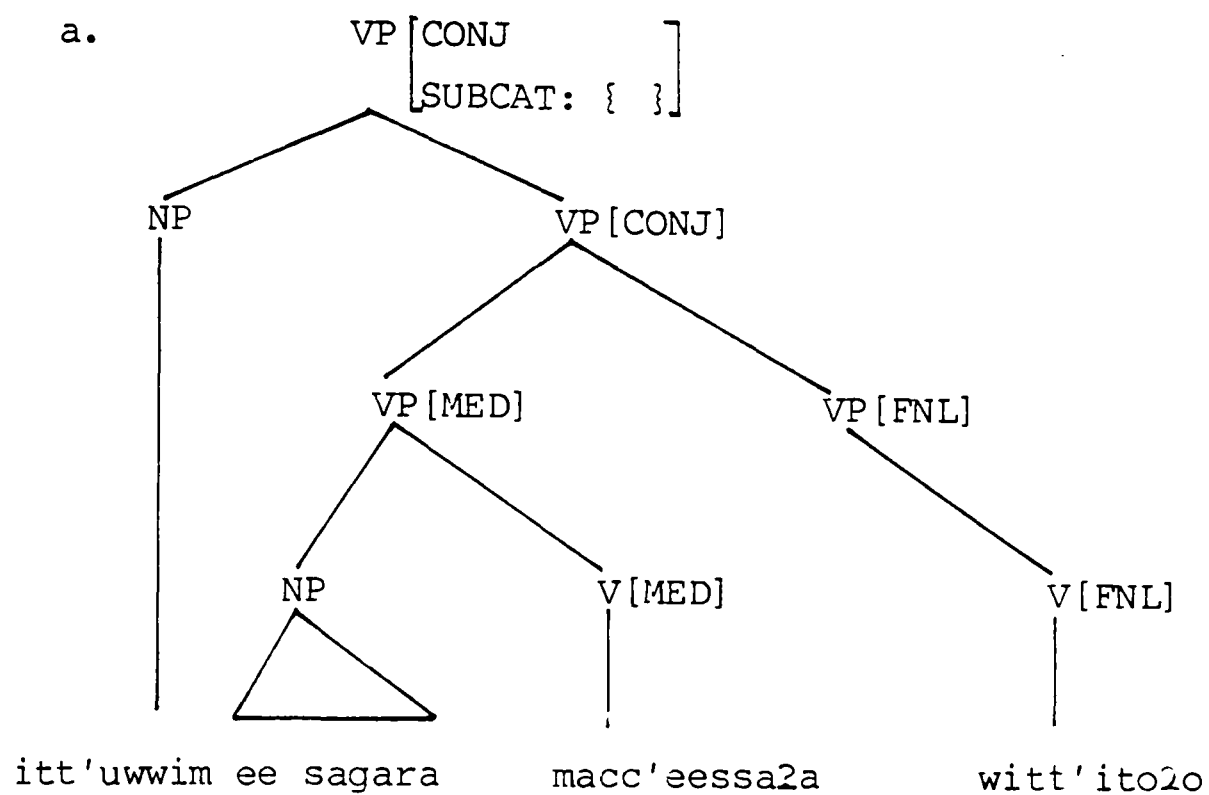
itt'uwim ee	sagara	macc'eessa2a	witt'ito'o
they-&	that sound	hearing	gathered
NPs	NPo	CV ₁ [MED]	V[PERF,FNL]

'And hearing that sound, they gathered together'

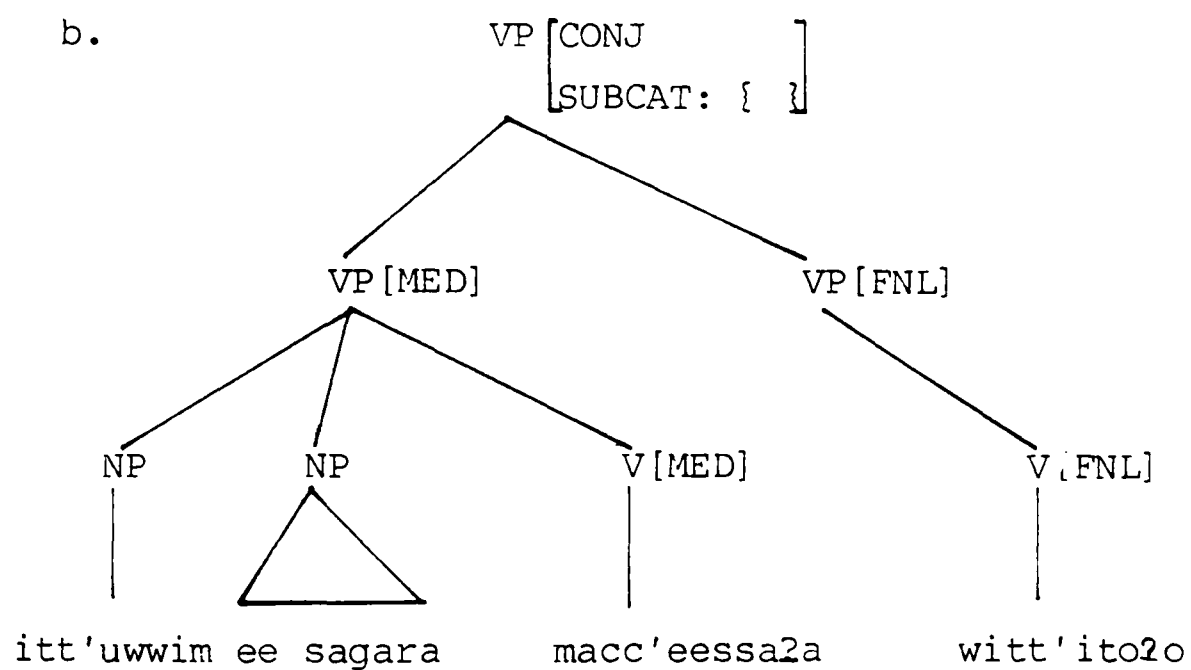
Derivationally, this might be represented by one of the trees in (6.51), in which V[CONJ] is informal notation for the coordinate mother.

(6.51)

a.



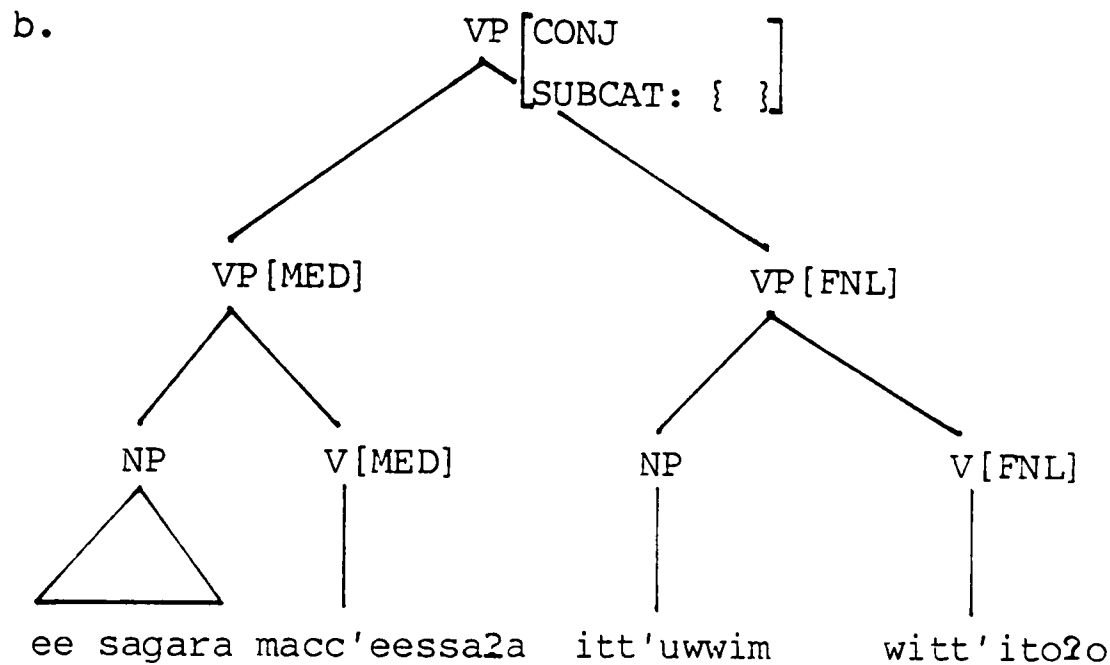
b.



(6.50) might alternatively be phrased as in (6.52a) with the corresponding tree (6.52b).

(6.52)

a. ee sagara macc'eessa2a itt'uwwim witt'ito2o



First, there is the matter of the configuration into which the subject NP is unified, but there is another important question raised here. Assuming it is correct to model clause chains like this by means of the Coordination Schema, at what stage in the generation of such strings is it to be applied? Specifically, can the head conjuncts unify irrespective of whether their subcategorisation requirements have already been met or not?

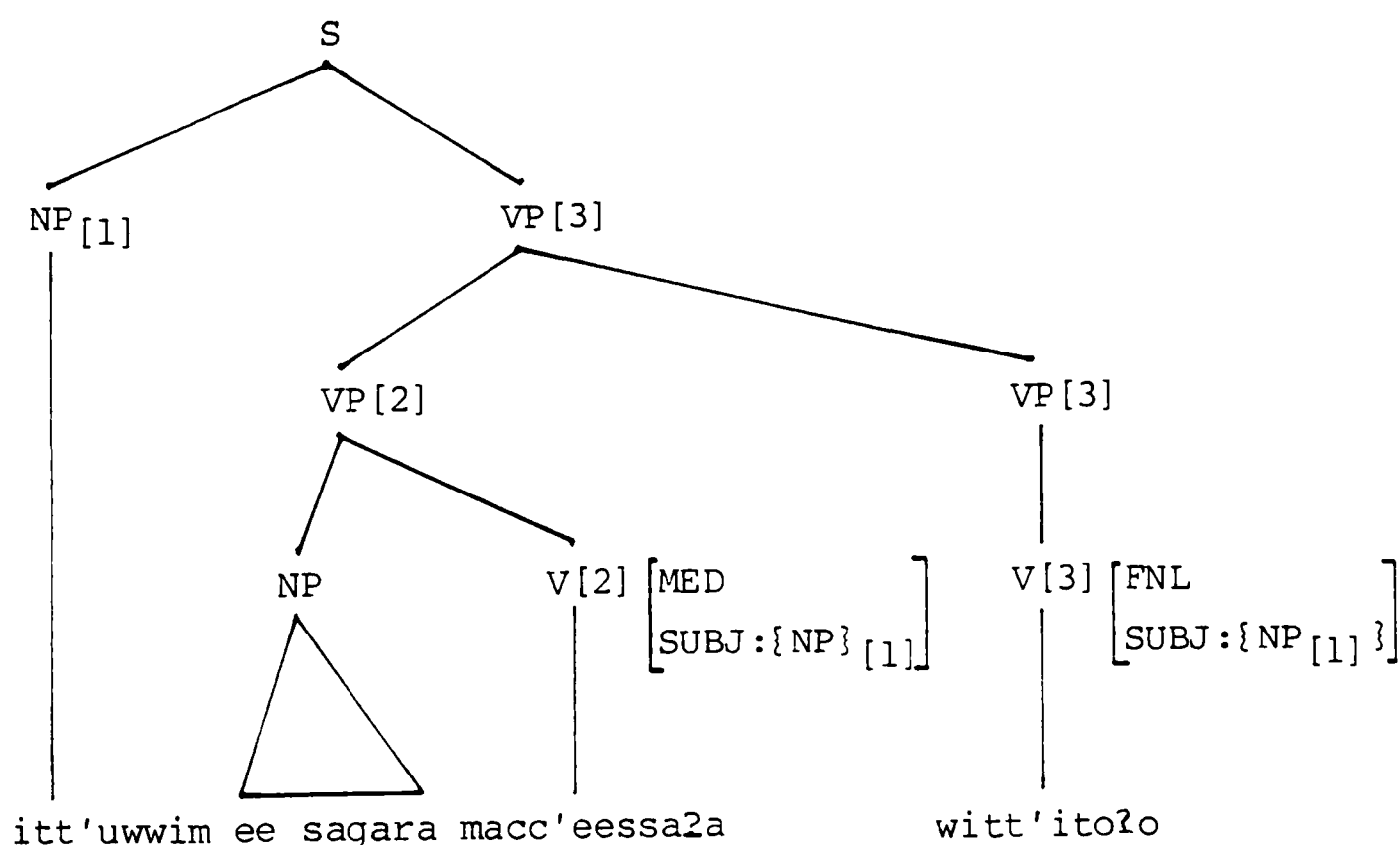
In (6.51a), VP[MED] and VP[FNL] unify under the coordination schema before their subcategorised-for subject complement; in (6.51b), the subject complement unifies-in to VP[MED] before coordination, and there is then the additional question of how the subject of VP[FNL] is to be construed. (6.52) is parallel to (6.51b), with the subject in the second clause, and again there is the problem of correctly construing the subject of [VP[MED]].

I will look at a number of hypotheses offering different constraints, and evaluate each empirically.

The most obvious constraint to try is that the verbal signs must

be saturated, except for their subject NP, before the Coordination Schema can apply, and that the subject unifies in after the coordination of VPs. This will allow the correct handling of different SUBCAT lists for each lexical verbal conjunct, and permits the structure in (6.53-) in which the subject is configurationally defined in relation to the coordinate VP. Although not essential, this would be quite elegantly achieved by Borsley's (1987) suggestion for a separate SUBJ attribute.

(6.53)



As it stands, the constraint licenses subjects only in sentence initial position, before the clause chain. Thus, (6.54a) would not be generated.

(6.54)

- a. ee sagara macc'eessa2a itt'uwvim witt'ito2o
- b. ee sagaram itt'uwv macc'eessa2a witt'ito2o

The constraint could be weakened so that the rule schema permits the subject complement to unify in as a third category simultaneous to the VP coordination. This will license (6.54a) but not (6.54b). That is, it will result only in strings in which each non-subject complement forms a constituent with its

head verb, and not in strings in which one of these is "front-shifted" to precede the subject, without being in a dislocated position. Recall that in Chapter 3 I argued for a flat structure in the simple sentence, with free order among NP complements. I also maintain a contrast between topicalisation, see Appendix II, and a free order in which object precedes subject, so that my conclusions of Chapter 3 I extend to the present situation also, arguing that in (6.54b) above there is no dislocated constituent.

Both of (6.54a) and (6.54b) can be generated if we relax the suggested constraint further, so that the subject complement also is able to unify-in before coordination of the VPs. In this case, the question arises how the subject complement is constrained to a single occurrence, and bound to all verbs in the chain. Recall the rule schema in (6.47), repeated again here in (6.55). It was already specified in (6.47) that the verbs in a SVC must all carry the same agreement structure. What (6.55) does in addition, is specify that this structure is cross-indexed to the AGR feature of the subcategorised subject complement, which through the INDS|AGR value on the subject head, will specify a coreferential subject.

(6.55) VP Coordination Schema -- second form

$$\left[\begin{array}{l} \text{SYN|LOC|HEAD|MAJ:VFORM: FNL} \\ \text{HD-DTRS:} \left[\begin{array}{l} \text{SYN:} \left[\begin{array}{l} \text{HD:} \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: MED} \\ \text{T-A: CV}_1 \end{array} \right] \\ \text{AGR: [1]} \\ \text{SUBCAT:} \{ \dots [\text{NP}] [1] \} \end{array} \right] \end{array} \right] \end{array} \right]^* \left[\begin{array}{l} \text{SYN:} \left[\begin{array}{l} \text{HD:} \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: FNL} \\ \text{T-A:} \end{array} \right] \\ \text{AGR: [1]} \\ \text{SUBCAT:} \{ \dots [\text{NP}] [1] \} \end{array} \right] \end{array} \right] \end{array} \right]$$

This solution requires that the appropriate constraint(s) are stated either in the Rule itself, as here, or abstracted into a Principle of Hadiyya grammar.

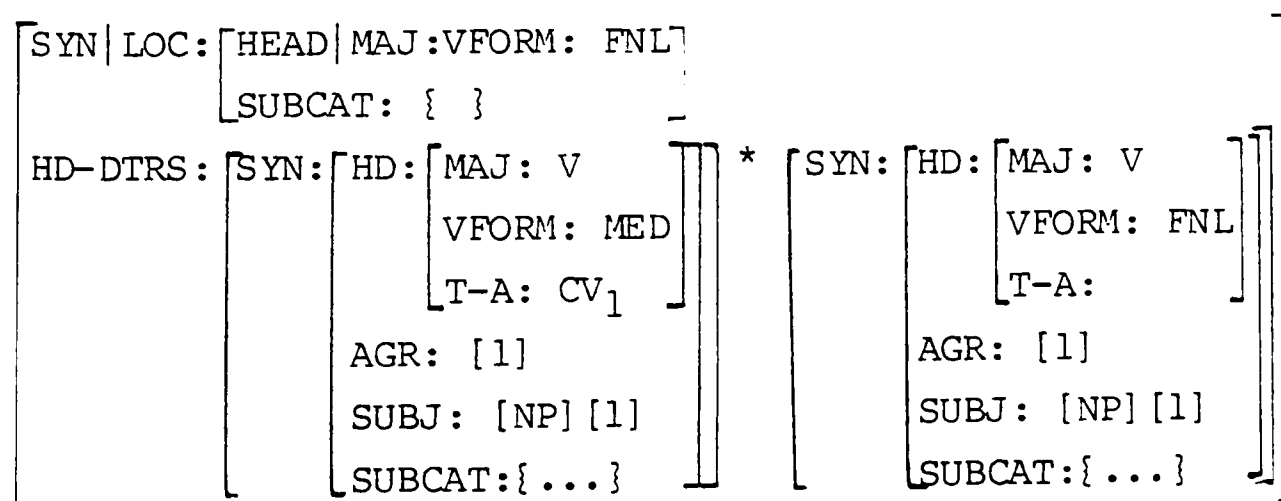
Relaxing the constraint on the point at which each unification can take place relative to the other constituents to this degree now allows for the occurrence of the subject at virtually any

point in the sentence. That is, the subject complement can unify-in to any constituent verb before or after coordination of these takes place; other subcategorised-for complements must unify-in before coordination. If we were to state that all NP complements must be unified in before VP coordination, the structure in (6.51a) would no longer be legitimate.

If we were to permit non-subject complements to unify-in after VP coordination, one would have to ask what form the unsaturated SUBCAT attribute of the coordinate structure would take; presumably the conjunction of the separate SUBCAT values. This is not a path I wish to pursue, since it appears that non-subject complements are normally bounded within the sentence of which the verb is head, and this further relaxation would make it difficult to constrain boundedness in this way.

Adopting the constraint that non-subject NPs unify before VP coordination, and that subject NPs are unordered with respect to coordination suggests just the sort of privileged status that Borsley's SUBJ feature offers neatly. The constraint required can then be stated as a requirement to empty SUBCAT before the coordination schema applies, but nothing need be stated about SUBJ.

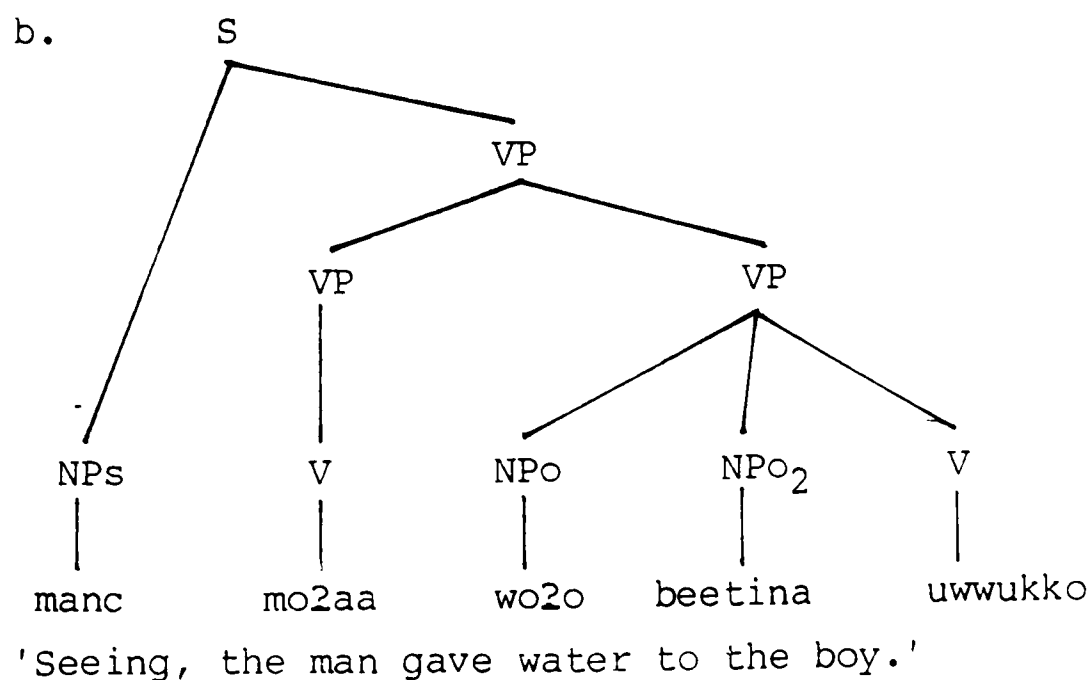
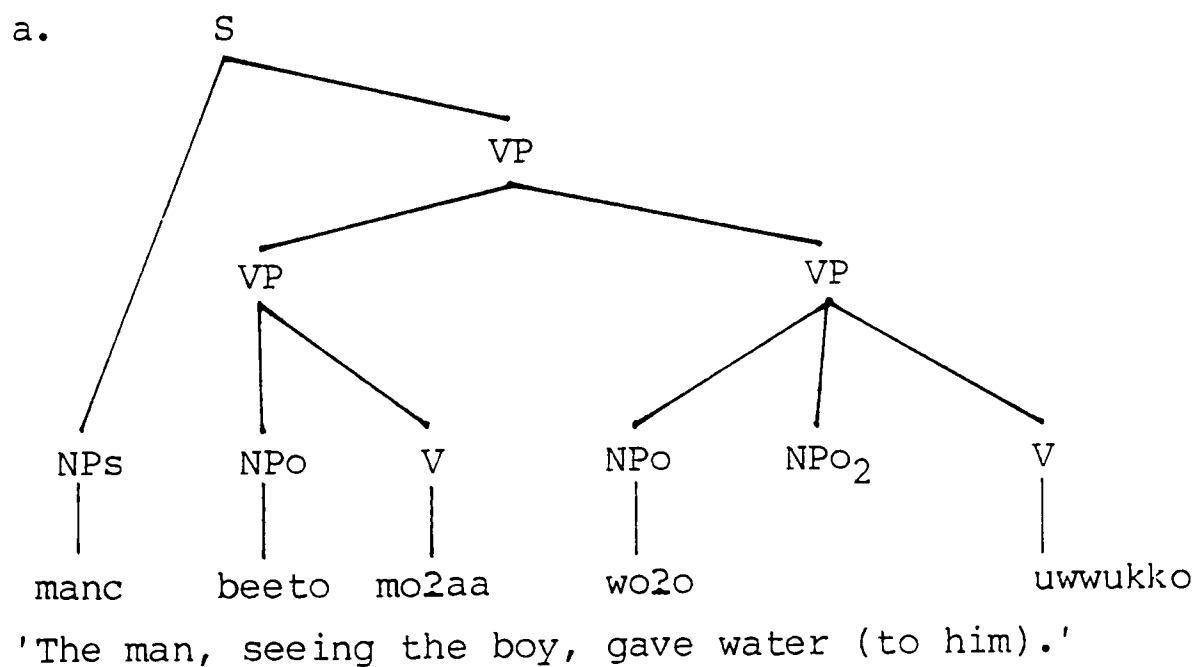
(6.56) VP Coordination Schema -- final form



Turning now for a moment to consider what happens among the non-subject complements, recall that in Sebba(1987) and in Foley & Olson(1985), as in other treatments of the SVC as it occurs in West African languages, a transitive verb in first position in

the serial structure positioned its object before the second verb. That is, the object is fixed in position, even if a later verb is also transitive, and has, notionally, the same object. The extent to which this is part of a larger "pro-drop" behaviour in such languages is not clear, the latter phenomenon not usually being considered at the same time as serialisation, but evidence in Hadiyya suggests that the position of non-subject complements cannot be understood without reference to pro-drop. In Hadiyya, if two verbs in a clause chain have the same object referent, that NP generally occurs preceding the first verb, with the second being anaphorically coreferent, as in (6.57), where I have informally subscripted grammatical relations to the various NPs.

(6.57)



The actual configuration adopted for NPs, the subject, is not relevant here; but note how beeto can appear in either clause, in its proper Case for that clause. However, in (6.57b), what the man saw is ambiguous in an isolated sentence, although it may be perfectly acceptable in a coherent context. The preference therefore is that the object appear in the first clause for which it is a complement, as in (6.57a), and the later null complement position interpreted as referring anaphorically to that. Whether this is a syntactically bound anaphora or pragmatically interpreted I am not able to decide at present, and find it difficult to see what evidence might bear upon the matter, although the preference for isolated utterances just stated implies it is syntactic anaphora.

The formalisation outlined in preceding paragraphs is sufficient to account for the variety of object position; but makes no attempt to deal with the problems of coreference, which are sentence specific, and anaphora will not be pursued here.

The above discussion to this point has pursued the option of using a coordinate rule schema to model the SVC. Briefly, I consider now the alternative already mentioned above, of using a feature such as COHEAD: [MAJ: V]. In its full form, this might be spelled out as follows:

$$(6.58)$$

```

[387
[SYN|LOC: [HEAD: [MAJ: V
                [FORM: FNL]
AGR: [2]
COHEAD: [SYN|LOC: [HEAD: [MAJ: V
                        VFOM: MED
                        [T-A: CV]D
                        AGR: [2]
                        SUBJ: [1] NP
                        SUBCAT: {...}
SUBJ: [1] [NP[NOM]
                [AGR: [2]]
SUBCAT: {...}

```

This requires stating a principle, somewhat parallel to the Subcategorisation Principle, which licenses the combination of a suitable CO-HEAD category iteratively, but presumably only once in the production of an SVC, to specify the coordinate status of these. It will also need to specify the restriction that no emptying of SUBCAT can take place after the expansion of CO-HEAD.

A merit of a COHEAD approach would be that the rule schema is now simply controlled by the V[FNL] head, the SVC is a constituent, with all medial verbs sisters of the final verb, and the simple schema $X \rightarrow Y^*$ is readily available. Further, there are intriguing possibilities of using an COHEAD attribute in other cases of head splitting. At this time however, I leave it as an aside.

In summary, then, if we are correct in maintaining the need to recognise a cosubordinate category, then no solution which simply adopts the schema for coordinate structures will ever really fit the bill. The essence of recognising at least this third category, is that it permits a coordinate status without imposing the normal requirements of either of the two traditional categories. The major solution of this section imposes a straight coordination approach, which is a syntactic one, operating under a rule schema; the use of COHEAD is not a coordinative approach, and operates from a lexical base -- the potential for combination is located in the lexical sign. Both complementation and adjunction operate from a lexical base also, so that from this perspective, coordination is alone in not employing any lexical means. Perhaps here is the starting point for a more unified treatment of these various phenomena.

6.1.4.3. Modifying Verbs.

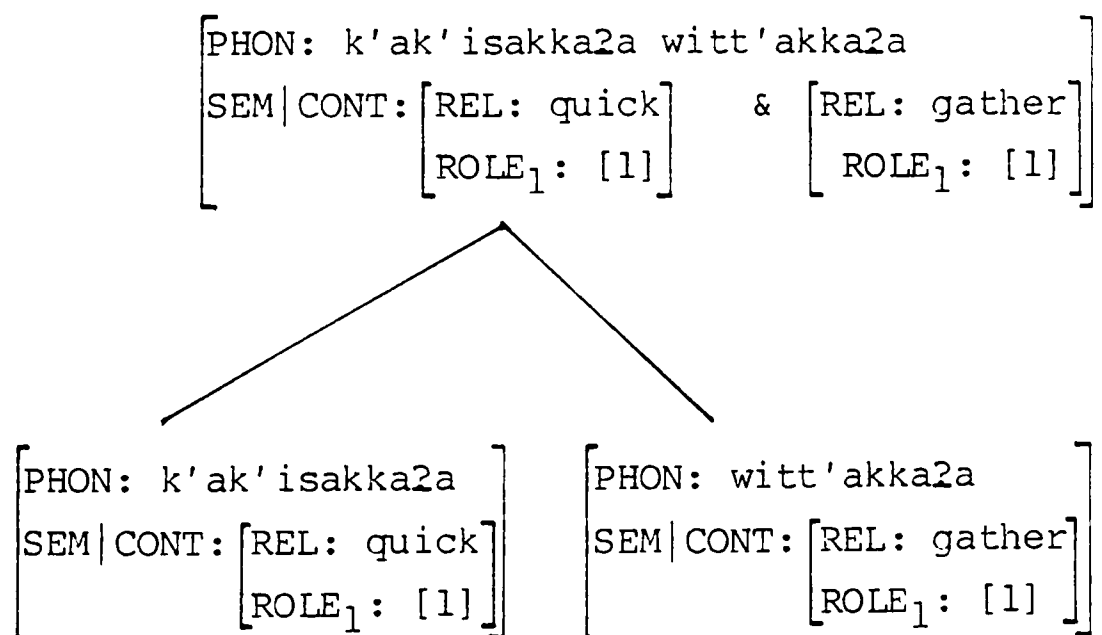
Here I want to consider further the question of possible texturing within the clause chain, considering adverbial and aspectual sub-sequences to be modifiers, within longer thematic

strings, and resembling more the close-knit SVCs so typical of West African languages.

There are at least two approaches to this. First, that modifying medial verbs are considered syntactically subordinate to the head they modify; or, secondly, that all medial verbs in chains are considered coordinate, and those with a modifying role specify that semantically.

This latter would be the simpler approach, maintaining a unitary solution for all clause chains. The modifying reading might then be considered to be a pragmatically bound interpretation which selects a particular combination for the SEM|CONT value. For example, in (6.59) the semantics of the constituent signs concatenate, and the "scope" of the first over the second is inferred rather than specified.

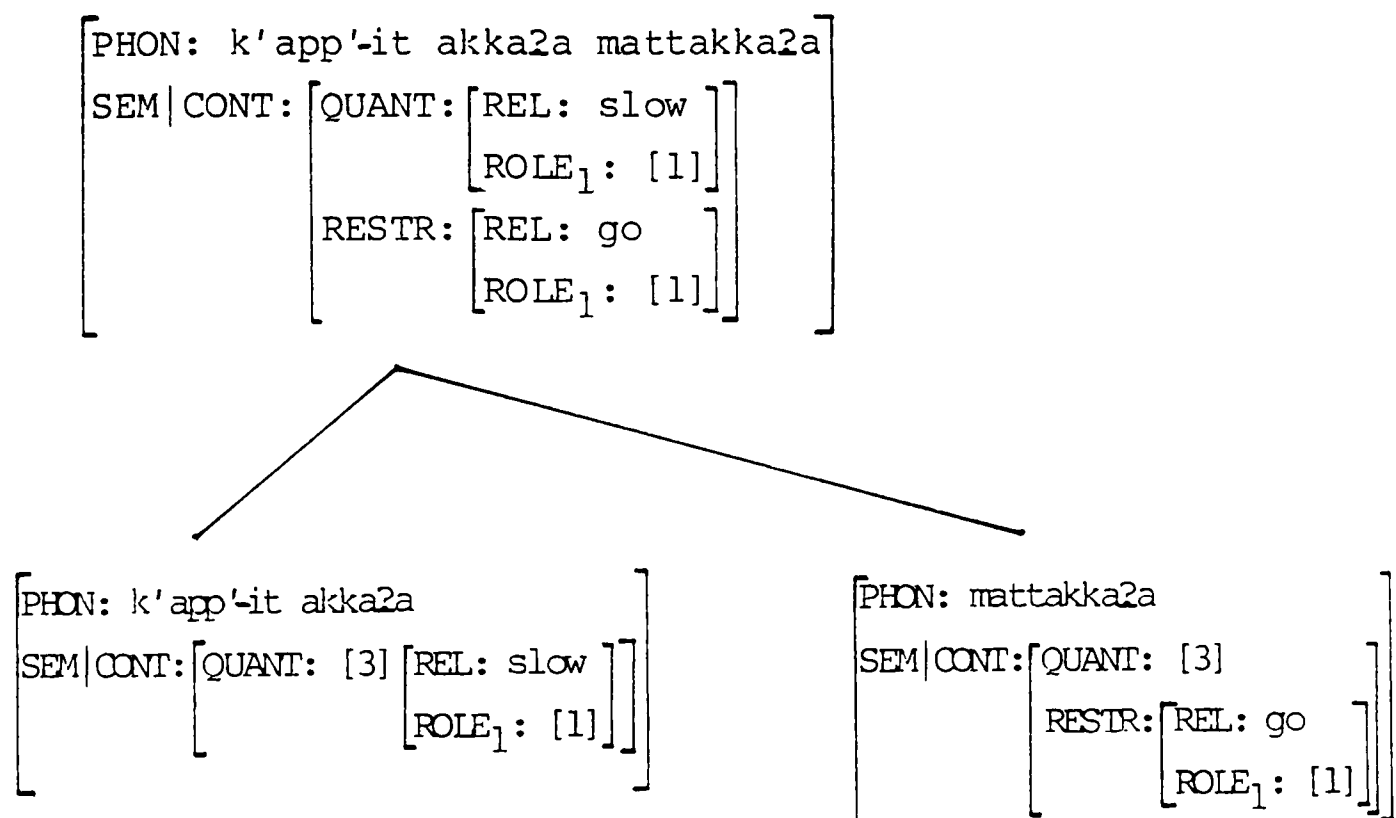
(6.59)



It seems necessary however, to restrict the scope of the "adverbial", the first verbal form here in some way, so that it is specified to be over only the immediately following verb. Adverbial scope has a function-argument relationship, $F(a,b)$, and if that is correct, then what is required is that the semantic attribute of the first is applied to that of the second much as a quantifier is applied to a noun. Pollard & Sag(1987:101ff) discuss this latter case briefly, and applying their approach leads to the following rough analysis.

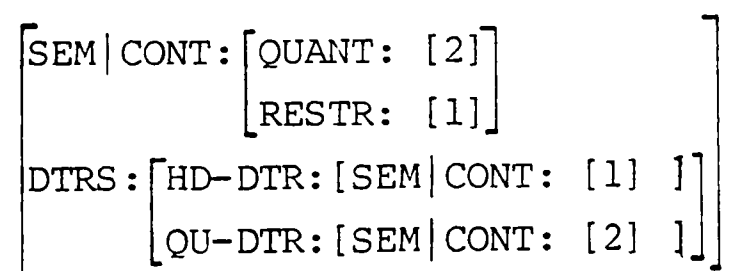
Consider the case in which the first clause modifies the second in a partial sentence like k'app'-itakka2a mattakka2a 'slowly going (2-res)'. The modifying verb is treated as a quantifier, whose semantic attribute is unified-in to the modified verb, specifying its scope over that verb. As the following partial tree shows, this is achieved via the attributes QUANTifier and RESTRIction.

(6.60)



The Semantics Principle must be revised to cover this. A first approximation might be as follows.

(6.61)

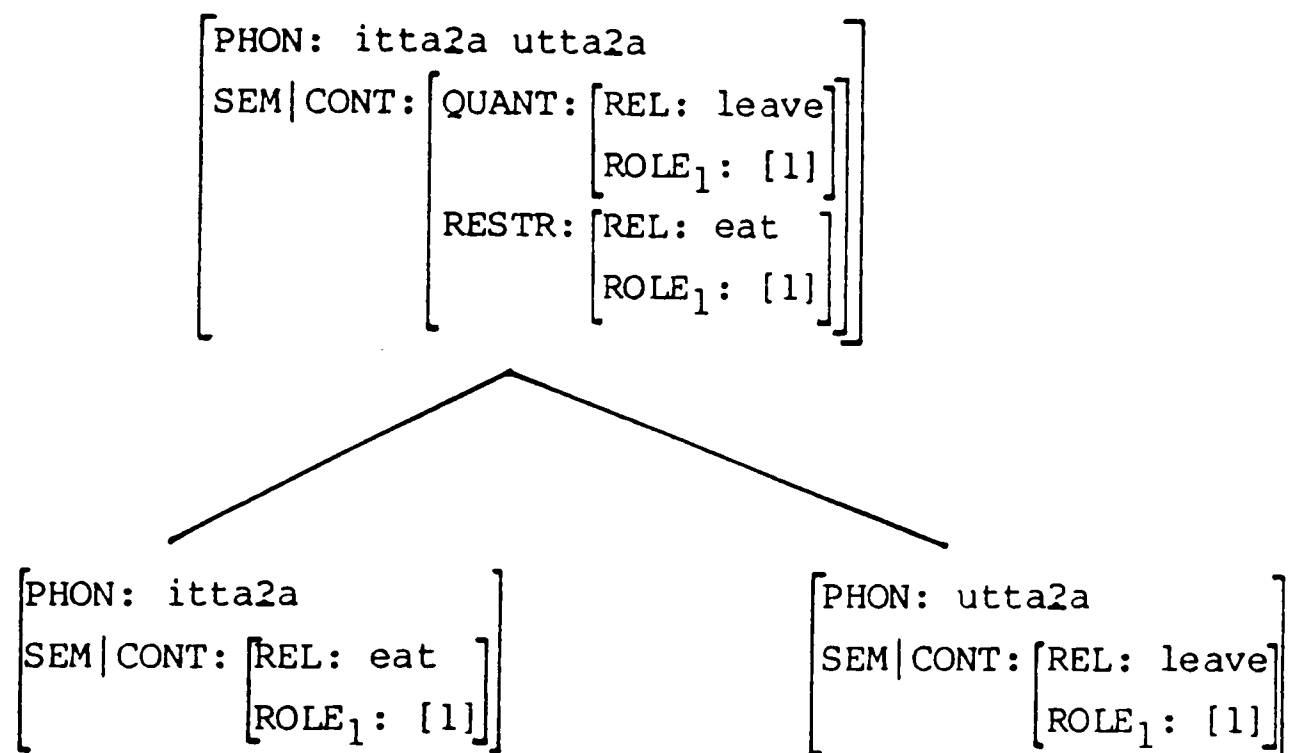


There must also be some way of deciding, both in a string to be parsed and in a number of signs to be unified, which verb is a quantifier or modifier over a following one.

Before attempting to answer that, consider this general solution

as a possible analysis of the aspectual link between converbs in itaa ki2aa 'eating rising' (=after eating), as in (6.62), for example. Once again, it seems right to assign one of these scope over the other, although it is the following one which has scope over the former this time.

(6.62)



One possible solution to the selection problem would be to specify the modifying verb in its lexical sign. The specification should not be merely a diacritic, but should be integral to the unification of the semantics via a schema like (6.61).

These modifying medial verbs are all monadic, although the verbs they modify are not, of course. The definition of semantic scope on these constructions might be taken as evidence of their particularly close relationship, and, at least in cases where no NP of the modified verb intrudes between, these forms might be considered to be coordinate Vs. This is borne out by the reluctance to cleft a sentence between the two verbs in such a sequence. Thematic SVCs then appear to be coordinate VPs, and the modifier-pairs to be coordinate Vs.

6.1.5. Summary so far.

The clause chain, or serial verb construction in Hadiyya is held to be parallel to the SVC, broadly construed, as found in West African languages, Chinese, and elsewhere. The modifying

sequences are candidates even under a narrow definition; other examples reveal a range of closeness/looseness of nexus which together range across the continuum from SVC to clause chain.

It is analysed as a coordinate or "cosubordinate" structure, and treated within a coordination schema similar to that already proposed for canonical coordination in Chapter 4. However, because of the V[FNL] status of the final, or syntactically independent, verb in such sentences, the rule schema cannot easily be reduced to the aimed for $X \rightarrow Y^*$, unless it proves possible to abstract specifics out of the schema into a Principle. A major difficulty in either case is the need to specify the head feature FNL on the mother, rather than subsume its specification under the HFP. Some empirical evidence was found which supports, although it does not require Borsley's suggestion that a separate SUBJ feature be employed.

Coordinate VPs are established, and their complement order licensed by a specific formalisation of the rule; modifying medial forms are treated as coordinate Vs, and a suggestion made as to how their semantics might have scope over the verb they modify, following the rough proposals of Pollard & Sag.

6.2. SWITCH REFERENCE.

In this section of the Chapter, I will discuss the phenomenon of switch reference in 6.2.1, and some recent analyses in 6.2.2. I will then turn to the Hadiyya evidence in 6.2.3, and propose a formalisation within the HPSG model. In the course of this, I will argue that SR occurs in cases of both coordinate structures and complementation, and consider intersentential SR also.

6.2.1. Introduction and Characterisation.

A Switch Reference mechanism has been reported for a number of languages in the Americas and Australasia, particularly in Papua New Guinea, in which one clause marks that the adjacent clause will have a different grammatical subject. (See Haiman & Munro

(1983) for a good recent survey). The only examples in the literature among African languages, as far as I am aware, are Gokana of the Cross-River group of Benue-Congo in Nigeria, Comrie(1983); Lango, a Nilotic language of Sudan, Givon(1983); and (some Grasslands) Bantu, Wieseemann(1982). None of these fits the canonical case: Gokana marks only same-subject, not different-subject reference, although there are cross-linguistic reasons for believing that SS is the unmarked form, and that, if only one is marked, then it is DS. Lango exhibits logophoric pronoun type marking, rather than SR, so also Stirling(1988). In Wieseemann(1982), the DS examples are marked by a free-standing particle, e, and so do not meet what I take to be the central characteristic, namely that a verb affix makes reference to an NP of another clause. Givon refers to Amharic, a Semitic language of Ethiopia, as being a clause chaining language exhibiting certain switch reference characteristics, as does his source, Gasser(1983).

I shall adopt the following commonly used abbreviations:

- SR = switch reference
- SS = same-subject reference in two clauses
- DS = different subjects in two clauses
- MC = marking clause, carries marker of SR
- RC = reference clause, marked by MC as of different
reference to MC

SR is typically, if only approximately described, as "a verbal affixation system which indicates whether or not the subject of the marked verb is coreferential with the subject of some other verb."(Haiman, 1983:105). In such languages, the DS marker typically takes the form of a formative following the verb of the marking clause, and generally marks the following clause as containing a different subject. Haiman & Munro(1983), in their Introduction, list the following features of DS systems:

- a formal similarity between SR and verbal concord
- the function is to avoid ambiguity of reference
- relationships between the two clauses vary, but a reference clause is never subordinate to a marking clause

- the DS marker apparently stands between the two clauses it coheres when the two are coordinate
- when the marking clause is subordinate, it may precede or follow its reference clause
- the two clauses are generally adjacent, otherwise (i) marking clauses all refer to one reference clause or (ii) the second of two marking clauses is further subordinated off the time-line.

Stirling sets out a somewhat similar characterisation in terms of five conditions, which I will review briefly here, because of the way in which she modifies each of the above to deal with potential violations.

1. The Realisation Condition. SR is marked by a suffix on the verb of a dependent clause (MC) which carries information about the following clause's subject (loosely defined: see Condition 4). This is central to the delineation of SR.

2. The Locality Condition. SR typically involves two linearly adjacent clauses, although this is broadened to include clause-skipping and focused SR. In clause-skipping, an extraneous clause intrudes linearly between MC and RC, and generally is subordinated to RC. In focused SR, a string of MCs each marks SR in relation to a single RC. Stirling hints that this might be subsumed under clause-skipping.

3. The Dependency Condition. Stirling views this disjunctively; either the MC is subordinate to RC, or SR operates in a clause chain construction having medial and final verb forms. These correspond closely to the same distinction I have been at pains to draw in Hadiyya, namely that medial verbs lack some or all of the inflectional potential of independent, final verbs, such as tense, aspect, mood, agreement features.

4. The Subject Condition. Rather than define SR purely and simply in terms of same or different subject, Stirling broadens this to cover ergative constructions, with Agent rather than

subject marking, and allowing SR to specify disjoint reference with any NP in RC.

5. The Functional Condition. Concern here is with specifying precisely what counts as disjoint or co-reference. For singular NPs, non-coreference is clear: 1st \neq 2nd \neq 3rd. Where at least one of the NPs concerned is plural, however, any of the following relationships might pertain to coreference:

NP ₁	properly includes	NP ₂
NP ₁	is properly included in	NP ₂
NP ₁	intersects with	NP ₂

Even descriptive linguists freely acknowledge viewing SR as weird and exotic. The reason is clear: "In more familiar languages, whether or not two arguments have identical reference -- especially when they are in different clauses -- is indicated on the arguments themselves." (Haiman & Munro, 1983:ix). In SR there is a violation of this categorial iconicity, in that a verb in one clause carries a marker which indicates something about a noun phrase in another clause. Haiman(1983:126ff) discusses how this may have arisen diachronically, and Stirling argues persuasively that the violation disappears if the domain of SR is viewed as the clause, not simply the verb (so that SR is a sentential operator).

In supporting this, she asserts that at sentence level, languages are frequently dependent-marking. Thus, in the relative clause, such languages commonly employ a relative pronoun, or opt for zero anaphora, and subordinate clauses generally carry their own syntactic subordinators. SR languages are generally head-marking, and many head-marking languages show dependency-marking only at sentence level. SR, she avers, is to be understood in this way: parallel to dependency-marking at S level, and functionally concerned with marking continuity of agreement features between clauses.

Finally, Stirling's account, which sets out to give a unified analysis of SR in natural language (p.51), notes that SR often

entails more than disjoint NP reference, frequently implying temporal sequence and/or causality. She specifically offers three criteria of adequacy for a comprehensive theory of SR:

1. A principled account of the full range of usages of SR marking, explicating the domains of co- and disjoint reference.
2. An analysis in other terms than configuration, of the anaphoric relations involved.
3. An account of the temporal and causal implications often encoded in SR formatives.

How these apply to the present attempt will emerge in 6.2.4.

6.2.2. Previous Analyses.

Apart from the articles in Haiman & Munro(1983), Roberts(1988), and a chapter in Foley & van Valin(1985), there are two recent full-length works which attempt a constrained theoretical analysis of SR: those of Finer(1985a) and Lesley Stirling(1988). I will discuss these two briefly in the following subsections.

6.2.2.1. Finer(1985a).

Finer(1985a) and (1985b)⁴ considers SR systems, largely from the Americas, and concludes that SR is not a pragmatically motivated device, nor a disambiguation strategy, but that it is firmly syntactic. His argumentation here is not very persuasive, and, in his efforts to establish that the phenomenon is fundamentally syntactic he is overly negative and dismissive of pragmatic and disambiguation strategies. Operating within a Government-Binding framework, he is concerned to prove that the phenomenon is within the proper domain of the syntactician, and for him of course, pragmatic and disambiguation strategies would put it firmly outwith that.

Finer sets out three assumptions (op.cit, p.8):

-
1. Finer(1985b) is basically chapter 2 of the other work.

(6.63)

1. there is no SR across coordinate structures
2. There is no SR in complement configurations
3. There is no SR inter-sententially.

He then insists upon treating MC as subordinate to its reference clause(RC), as indeed he must to obtain configurational control within Binding Theory. This is a serious error, however, and it is not ameliorated by the fact that Haiman & Munro(1983) only became available to him late on in his work (see his comments on pp.158,187). He unfortunately takes no account of a sizable body of literature stemming from the 70s, including such work as Franklin (1971), Staalsen(1972), Longacre(1972), Olson(1978) and (1981). Secondly, and without any argued justification, he dismisses claims for coordinate status in SR that are known to him (see pp.37, 81, 196f), preferring to view them as subordinate SR. Admittedly, he does retract somewhat from this position in the final chapter, which however only provides an addendum to the analysis he has pursued.

As Stirling(1988:7) comments, this leaves him with "a very restrictive notion of switch reference which is readily shown to be unrepresentative" and "open to criticisms for the unjustifiable assumptions [he] makes."

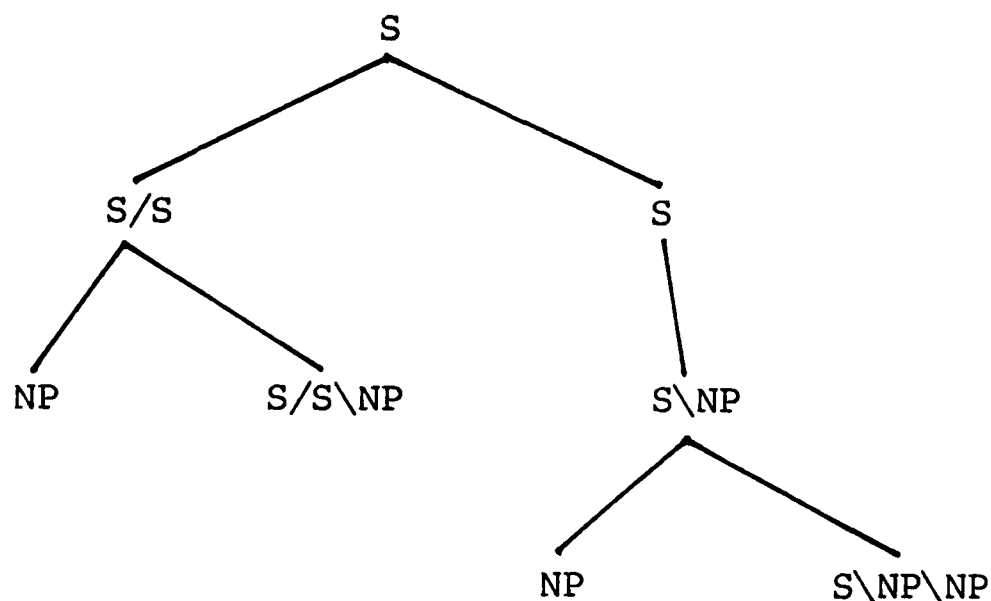
In pursuing his analysis within Binding Theory, he is constrained to assume that SR information starts off in the abstract COMP node, from where syntactic and semantic information percolates onto the subject nominal of the clause, while phonological information is realised on the verb. This is uncomfortably contrived, and I will not consider it further, especially since its empirical foundation is demonstrably so weak.

6.2.2.2. Stirling(1988).

Stirling works in Unification Categorical Grammar(UCG), allied to a semantics framed in terms of Discourse Representation Theory (DRT).

The starting point of her formal treatment is to select the category of the medial (MC) clause to be S/S ; that is, a sentence with a right-ward sentence dependency. This leads to the following structural tree:

(6.64)



She then proposes a unary rule mapping $S\backslash NP$ into S , and allows the category S/S to be satisfied by either S or S/S . In setting up the MC as S/S , she agrees that this is the category usually given to sentential modifiers (adverbs and adverbial clauses), and does in fact defend a parallelism between medial clauses and adverbial modifiers, although distinguishing "between medial clauses and other adverbial expressions both in the feature structures associated with the categories and in the semantics given to the switch reference markers." (p.176). She then introduces the feature $VFORM$, with values {subordinate, root}, which is defined for all verb forms and is inherited by the clause of which the verb is head. So, the SR category becomes:

(6.65)

$$S_{[1]}[VFORM \text{ root}] / S_{[1]}$$

where $[1]$ signifies agreement in all feature values, and accounts for the medial clause inheriting the tense, aspect, polarity and mood which is marked on the final clause.

To see how the DRT semantics operates, consider (6.66), taken from Stirling(p.184ff).

(6.66)

uqa ho.co-b sab je-i-a
 3s come-DS-3s food eat-3s
 'He_i came and he_j ate the food'

The DRT account of this is repeated here in (6.67), in which
 e signifies eventuality, the placing of the event in
 the time continuum
 x is a discourse representation marker for some parti-
 cipating entity
 y is a discourse representation marker assumed to be
 introduced previously

(6.67)

e ₁	e ₂	now	x ₁	x ₂	x ₃
come (e ₁ x ₁)					
x ₁ = y					
e ₁ < e ₂					
x ₁ ≠ x ₃					
food (x ₂)					
eat (e ₂ x ₃ x ₂)					
e ₂ < now					

Interpreting this verbally, some 'he' (x₁), assumed to be previously introduced, came (e₁) and at a time after that (e₂, where e₁ < e₂) but before now (e₂ < now), some other 'he'(x₃, where x₁ ≠ x₃) ate the food. The disjoint reference is constrained by x₁ ≠ x₃. Or, the following formal intepretation can be given, in which [a₂]A signifies the sentence (Stirling 1988:186):

(6.68)

$[e_1][\text{come}'(e_1, x_1) \ \& \ e_1 < a_2 \ \& \ x_1 \neq \text{subject}([a_2]A) \ \& \ [a_2]A]$
 $[e_2][\text{food}'(x_2) \ \& \ \text{eat}'(e_2, x_3, x_2) \ \& \ e_2 < \text{now}]$

With this brief review, I turn to consider the relevant Hadiyya data.

6.2.3. The Hadiyya Data.

The issue of the status of the two clauses in SR constructions is of considerable importance for the elucidation of control, of subject-verb agreement mechanisms, and especially of the "long-distance" type across two clauses. Much of the confusion in the literature concerns the conflation of embedded-ness and syntactic dependence within the notion subordinate, and there is good grounds in switch reference data also in Hadiyya, as in the SVC, for motivating a third category, be it cosubordinate, orthordinate, or whatever.

Hadiyya data discussed below will not only substantiate this plea, but will challenge Finer's basic assumptions. First, if the present case can be shown to be SR, then it would appear to be the first "canonical" case to be reported for African languages. Secondly, a good case can be made that we are dealing with a "coordinate" structure, not an embedded one, countering Finer's first assumption in (6.63). Thirdly, it is also held that Hadiyya exhibits SR in complements, against Finer's second assumption, which I assume he does not intend to restrict to infinitival complements. Fourthly, there is evidence that at the least invites reassessment of his third assumption also. Finally, while Hadiyya does not provide counter-evidence to a syntactic motivation for SR, I want to weaken Finer's implication that pragmatic motivation and rule-governed syntax are mutually exclusive.

It is noteworthy that many languages exhibiting SR are typologically SOV, inflecting in nature, and with dependent

clauses preceeding main clauses. Hadiyya conforms to this pattern, as do many languages of the Ethiopic area, which therefore may well provide other African exemplars of the device.

In the following subsections I look in detail at the structure in Hadiyya that I posit to be SR in nature.

6.2.3.1. SR in Hadiyya.

The relevant structure in Hadiyya is illustrated by the following examples:

(6.69)

it' meenticco leto2aare, it' mulam gattukko
 his woman she-having-, he alone he-remained
 died
 'His wife having died, he was left alone.'

(6.70)

manc₁ beetina₂ wo2o uwwukkaare₁, agukko₂
 man to-boy water he-having-, he-drank
 given
 'The man gave water to the boy, and he drank it.'

In the second example, the subscripting is only to facilitate interpretation, by indicating co-reference. This can be further substantiated from natural text.

(6.71)

"ee duu2n gadanonne gii2lis kašaraakko
 that mountain beside fire-as wh-is-red

 maruww duuyye?" yukkaare, "oo giira labookkokk
 what he-said-DS that fire wh-seems

 itt' iillenne" yito2o
 his eyes-LOC they-said

'When he said "what is that which is red like fire beside that mountain," they said "It's his eyes that seem like fire."
[Nine Hyena Cubs Hunt with a Lion]

(6.72)

oo goticc ee ammanem wo2ina hobbic asse2ukkaare,
that hyena that time for-water lion he-sent-DS,

goticc marukko
hyena he-went

'At that time the lion sent the hyena for water, and the hyena went.'
[Judgement of the Animals]

(6.73)

buut' bikkina moo2noommaare, buut' awaadimm hoffaneyyo
horns about we-look-DS, horn's use isn't-small
'Looking at horns, horns' use isn't small' [About Cattle]

6.2.3.2. Characterisation of the Construction.

Features of the construction in Hadiyya are as follows:

1. The two clauses obligatorily have different grammatical subjects.
2. The DS relationship is signalled by the suffix -aare, or -re, in which the final syllable is in fact optional. I tend to treat the -re alone as the DS marker, but nothing hinges on this. What the nature of the long aa is I have no suggestion; I tend to treat it as part of the verb form. Jacobson(1957) defines SR as obligatorily marking DS, but in Hadiyya the Vform itself supplies sufficient specification.
3. The verb marked for DS (ie. MC), is always in sentence medial form, specifically that of converb₂. Recall that in 2.3.2.1 three paradigms of CV₂ were laid out, corresponding very closely to the forms of the Imperfect, Simple Perfect and Present Perfect. A

re-phrasing of (6.70) above using converb_1 becomes ungrammatical by virtue of that fact. Thus:

(6.74)

* manc beetina wo2o uwwaa, agukko

4. The verbs are in chronological sequence, and non-permutable.

In addition, there is generally an implication of more than change of subject; typically there is a temporal or causal tie between the two clauses, see Haiman & Munro(1983) and Stirling (1988). This tie may not arise from the lexical meaning of the DS marker, but from the human tendency to infer such cause-effect relationships, as I suggested in 6.1.4.1 when discussing the SVC. This temporal or causal relationship between the two parts can be seen in the following.

(6.75)

- a. gotic (muunukkaare), mann sa2-ito2o
'hyena having-howled, people feared'
- b. gotic (muunukk ammane), mann sa2-ito2o
'hyena when-he-howled, people feared'
- c. gotic (muunukk bikkina), mann sa2-ito2o
'hyena because-he-howled, people feared'

These three are clearly very similar in meaning; (c) is explicitly causal, (b) encodes causality under an apparently temporal relationship, and (a) leaves the causality implicit.

It could be argued that the suffix -re, or -aare, is a conjunction, but there are a number of reasons against this. First, subordinate conjunctions are usually case marked nominals in Hadiyya, see Chapter 5.1, and -(aa)re lies outside that system. Secondly, -re could not readily be derived from a nominal, which other subordinate conjunctions are: it is only one syllable,

which Hadiyya nominals are not, and since Hadiyya lacks word-initial r, it could not be a word-initial formative, at least in its present phonological shape. Nor does the fuller form -aare relate to any nominal. Thirdly, it is a highly structure-specific formative -- being used in just this construction, while conjunctions occur in several constituent roles. -(aa)re is not a part of the Case system either, there being no other Case marker of similar phonological shape, and neither does it occur suffixed to a subordinate adverbial clause. In fact, the form is unique to just this position in Hadiyya, and I conclude that it is a particle whose lexical meaning is simply SR. That still leaves its historical derivation unexplained, of course.

The fact that it never occurs in place of a subordinating conjunction, nor co-occurs with one, supports the argument that in Hadiyya SR is not a subordinate structure. This is supported from examination of coherent text, where the following sequence is found:

(6.76)

Serial sentence(subj₁). Serial sentence(subj₁) -
 DS-clause - serial sentence(subj₂). Serial
 sentence(subj₂)

The serial verbs with subject₁ are all on the theme-line, and continue right up to and including the DS clause to spell out thematic propositions, which are switched at the point of DS to introduce thematic propositions, still on the theme-line, but with a new grammatical subject. Consider the following example.

(6.77)

loh agana afaa lasage, wodda2 k'arona
 'six moons it-reached after, previous for-bearing

 uwwukko manc "ii bira dabattoyyonnihe?" yaa
 who-gave man₁ "my money will-you-not- " saying₁
 return?

ki2aakka, wodda2 matim bito uwwaakko.
rising2, previous first sum he-gave2'

'After six months passed, the previously mentioned man who gave the money for interest went and said, 'Will you not return my money?', and (the other man) untied(DS) it from the place where it was previously tied, and gave the original sum.' [The Money that didn't Bear]

The first clause is a subordinate adverbial clause setting the time, and clearly marked by lasage, and thereafter the theme-line is carried by the verbs yaa, ki2aa, marukkaare, tiraa, ki2aakka, uwwaakko. The first three of these have the lender as grammatical subject, and signalled by marukkaare, the last three verbs have the 'banker' as grammatical subject.

Finally, if the SR sentence is terminated at the marking clause, we can get, schematically,

(6.78) serial sentence(subj₁). ihukkaaremdu, serial
 sentence(subj₂).

ihukkaaremdu might be roughly glossed as 'but', although it is a very complex frozen form /ih-u-kk-aa-re-m-d-u/ consisting of

$$(6.79)$$

Verb-Perf-3ms-converb₂-DS-coordv.-contrastv.-irrealis.
part. part. aspectV

It is not formally a conjunction, then, but itself encodes an SR relationship (note the -re). Functionally, it can serve to continue the discourse on the theme-line, with a new grammatical subject, which must be the first NP to follow this form. Incidentally, here is an interesting piece of data suggesting at least partial referent tracking inter-sententially.⁵

5. However, not all occurrences of this form conform to this simple case, and I leave open the question as to whether this use might be subsumed by a more broadly defined one.

(6.80)

illage yakko2isa ihmma urakka2a weecc'akku2uyya
 before as-she-tried be she-leaving while-calling

lobakata yakko2o. ihukkaarem an c'aww-aa urummo.
 greatly she-tried. But I quietly left

'As she had tried before, she tried hard, calling to
 leave (me) be. But I simply left.' [An Autobiography]

An alternative second sentence *anim c'aww-aa urummo 'And I
 simply left', with -m replacing ihukkaarem is rejected here.

As well as not fitting under subordination, it is clear that SR
 in Hadiyya does not fall within the canonical coordination
 schema either, nor does it co-occur with a lexical coordinator
 like odim 'and/also.'⁶ As I concluded in 6.1.3.4 when dis-
 cussing the clause chain, the SR sentence also is best
 characterised as [- embedded, + dependent]. Comrie(1983)
 argues that this is the major factor. Note that the occurrence
 of three paradigms of CV₂, based on Imperfect, Simple Perfect
 and Present Perfect, supports a greater degree of independence
 of the two sentences in SR relationship than is the case in the
 SVC.

Finally, returning to consider (6.77) in passing, it is signifi-
 cant to note that the new grammatical subject is not introduced
 by an NP, only by the SR mechanism. The short fable having only
 two major participants, the 'lender' and the 'banker', there can

6. I find Finer(1985:49)'s logic disturbing. Asserting that SR
 does not occur in coordinative structures, he offers data from
 Seri and Diyari where a DS marker does not co-occur with an
 overt coordinative conjunction. Generally speaking, this is
 just the situation in which DS marking does not indeed occur: it
 is in the absence of an explicit coordinator that it is found.
 He illustrates his assertion by the data, but does not
 demonstrate its validity.

be no possible ambiguity or confusion. The null complement phenomenon is once again seen to be wide in its embrace.

6.2.3.3. Coordination of more than Two Clauses.

6.2.3.3.1. Restricted to Two Grammatical Subjects.

(a). The first case concerns sentences in which there is a switch of subject once in the sentence.

(6.81)

- a. manc₁ beetina₂ wo2o uwwukkaare₁
 man to-boy water he-giving-DS

agaa₂ godduko₂
 he-drinking he-became-satisfied'

'When the man gave water to the boy, he drank it and was satisfied.'

- b. beet₂ manc₁ wo2o uwwukkaare₁,
 boy man water he-giving-DS

agaa₂ godduko₂
 he-drinking he-became-satisfied

'The boy the man gave water drank it and was satisfied.'

- c. manc₁ wo2o uwwukkaare₁,
 man water he-giving-DS

beet₂ agaa₂ godduko₂
 boy he-drinking he-became-satisfied

'When the man gave water, the boy drank it and was satisfied.'

In (6.81a) beet 'boy' is construed to be the subject of the second verb (and what he drank, and what satisfied him, was wo2o

'water'). Note also, in (6.81b), the fronting of clause two subject.

(b). Secondly, consider sentences in which the subject switches away from NP₁, and then later back to NP₁.

(6.82)

a. manc₁ beetina₂ wo2o uwwukkaare₁,
man to-boy water he-giving-DS

agukkaare₂, liiramukko₁
he-drinking-DS he-became-happy

'The man gave water to the boy, and he drank it and made him happy.'

b. manc₁ wo2o uwwukkaare₁,
man water he-giving-DS

beet₂ agukkaare₂, liiramukko₁
boy he-drinking-DS he-became-happy

'The man gave water, and the boy drank it and made him happy.'

In such sentences there are two subject switches, and this can be realised syntactically by the use of converb₂ twice, although there is a certain awkwardness apparent in such usage. It is tempting to explain comprehension of such utterances by relevance criteria, following Sperber & Wilson(1986). In (6.82a) manc is clearly the subject of the verb uwwukkaare, and the following subject is hereby marked as not-manc; beet is the most readily recoverable subject from context for agukkaare, and the next subject is marked as not-beet; manc is then the most recoverable subject for liiramukko. Consider now

(6.83)

- a. manc_1 beetina_2 wo2o uwwaakka_1 , agukkaare_2 ,
 man to-boy water he-giving he-drinking-DS

liiramukko_1
 he-became-happy

- b. manc_1 wo2o uwwaakka_1 , beet_2 agukkaare_2 ,
 man water he-giving boy he-drinking-DS

liiramukko_1
 he-became-happy'

These data have the same readings as that in (6.82) above, the significant difference here being that the first SR is encoded with converb_1 , which has been explained in section 6.1 as encoding same subject reference. Note that converb_1 here carries the otherwise optional 3rd person masculine singular marker -kka, and is thereby more highly marked morphologically. It would seem that this contributes to the use of the structure in such SR sentences. Givon(1983:67) offers the hypothesis, from a functional perspective, that "The more continuous/predictable is the topic/subject/referent NP, the less overt expression it needs to receive." Might it be that -kka here, suffixed to a CV_1 form, is used to raise attention re the subject, and so help the hearer to infer subject switch? At the present time I prefer this, rather than a split account of -kka, where, in (6.40) it certainly falls within a SS interpretation, and in (6.83) takes a DS reading.

Again it is tempting to adduce relevance criteria in support of a comprehension strategy for these sentences. manc(NOM) is indubitably the subject of uwwaakka; in (6.83b), beet(NOM) is just as clearly the subject of agukkaare; agukkaare shows SR marking, so that the subject of liiramukko cannot be beet, and must presumably be the only other agent/patient in the context, manc. The lexical meaning of uww-, and ag- undoubtedly contribute to interpretation, perhaps crucially in (6.83a),

where the obvious inference is that if the water is given to another, it is the recipient who drinks it.

It cannot be maintained that the converb₁ in clause one marks identity of subject with clause three, since two clause examples such as the following can also be found.

(6.84)

hobbicc ʃukkaare, got lam geejj laro itukko
ʃaakka

'lion having- hyena two fat cows he-ate'
 killed

'The lion killed and the hyena ate two fat cows.'

Although converb₂, ʃukkaare, is strongly preferred, the other form, ʃaakka, converb₁, is also found. In view of the fact that most of the occurrences of CV₁ in such sentences have been noted in the unedited collections of Stinson(1965) and Cremer(n.d), it is tempting to brush this aside as a performance question; it is worth more attention than that, however.

6.2.3.3.2. With Three Grammatical Subjects.

Such sentences are in no way typical of spoken or written Hadiyya, which prefers to maintain a single grammatical subject for a stretch of several clauses, and apart from a single SR device, typically encodes further subject switches in new sentences introduced by ihukkaaremdu, resulting in a more choppy style.

Consider to start with, three simple clauses.

(6.85)

a. manc beetina wo2o uwwukko

'The man gave water to the boy.'

b. beet wo2o agukko

'The boy drank the water.'

c. meenticco liiranto2o

'The woman became happy.'

These can combine, giving the following.

(6.86)

manc₁ wo2o (uwwukkaare₁), beet₂ agukkaare₂,
(uwwaakka₁)

meenticco₃ liiranto2o₃

'The man having given water, the boy drank, and the
woman was happy.' (The boy's quenching his thirst
pleases her)

This serves again to illustrate the use of converb₁ in the first clause, as alternative to a converb₂ form. It is worth pointing out here that some Hadiyya speakers reject having two -re formatives in one sentence in such examples, but it occurs fairly frequently in text. Those who reject two occurrences, on reflection tend simply to omit the -re, using uwwukkaa instead.

In (6.86), each clause retains its own subject NP; the Dative beetina 'to the boy' has been deleted from clause one, and the absolutive wo2o 'water' from clause two. The above sentence can occur with dislocated subjects in a centre-embedded structure, as in (6.87).

(6.87)

meenticco₃ beet₂ manc₁ wo2o uwwaakka₁,
agukkaare₂, liiranto2o₃

Lit.: 'The woman the boy the man water gave, drank,
became happy.'

When beet is fronted in this way, the first clause Vform uwwaakka is preferred over uwwukkaa, with strict avoidance of -re here.

There is marked rising intonation on and pause after each subject in such utterances. Such a string, with three sentence initial grammatical subjects is still acceptable, but, not surprisingly, does not represent the most felicitous word order, and demotion of the second subject is the preferred alternative.

(6.88)

meenticco₃ beetina₂ manc₁ wo2o uwwaakka₁,
agukkaare₂, liiranto2o₃

The placing of beetina, a dative phrase, in the fronted subject string, itself fronted out of what might be termed its unmarked position in its clause is interesting.

The stringing of subjects at the front of the sentence like this is highly specific to the SR sentence; for example it cannot occur in a sentence with an S-complement, as in (6.89), but this is a stylistic avoidance, since certainly laap'is can occur sentence initially here, thus embedding the complement sentence.

(6.89)

*laap'is annor ergooge iittoo2isa ama2nookko
L₁ A₂ E he-loves₂-COMP he-believes₁
'Laapiso believes that Annoro loves Ergooge'

Finally, I want to recall attention to section 5.2.2, which dealt with subjunctive complements. Recall that there are two subjunctive forms, parallel in form and in sentence syntax. Each can occur as the subcategorised complement of a matrix verb. The only difference in function between the two is that my SJ₁ requires SS reference with the subject of its matrix verb, and my SJ₂ requires DS reference with its matrix verb. Although it does not seem possible to formally separate subjunctive and DS formatives, there is little doubt but that we have here also a part of Hadiyya's SR system, and indubitably an example of SR in the complement system.

I have established above that an SR structure does occur in

Hadiyya, that it occurs between sentences, each with its own subject, and that the sentences concerned are in a coordinative relationship. Also, SR in Hadiyya occurs in the complementation system. Finally, the data on ihukkaaremdu suggest that there is some degree of DS function across sentence boundaries. These data and conclusions refute *Finer*(op.cit)'s assumptions, given above in (6.63).

6.2.4. Formalisation.

Stirling's categorial solution can be adapted to the basic facts of Hadiyya too. Reinterpreting it within HPSG for this purpose, it will require that a medial CV_2 verb form includes a $V[FNL]$ category in SUBCAT, as in (6.90).

(6.90)

$$\left[\begin{array}{l} \text{SYN|LOC:} \left[\begin{array}{l} \text{HEAD:} \left[\begin{array}{l} \text{MAJ: V} \\ \text{VFORM: MED} \\ \text{T-A: } CV_2 \end{array} \right] \\ \text{SUBCAT:} \left\{ \left[\begin{array}{l} V[FNL] \\ \text{SUBCAT: } \{ \dots NP_{[2]} \} \\ \text{SEM|CONT: } [3] \end{array} \right] \dots NP_{[1]} \right\} \end{array} \right] \\ \text{SEM|CONT: } \text{ROLE}_1: [1] \quad \& \quad [3] \end{array} \right]$$

SUBCAT on a medial verb is then a set of categories consisting of the head verb's NP complements as well as the requisite $V[FNL]$ category. The indexing of NPs, such that $[1] \neq [2]$, specifies the non-coreference of the different subjects of the two clauses or sentences. And, finally, the semantic attribute is taken here to be the conjunction of the separate semantic values of the two sentential categories.

However, there are some problems also with such an analysis. Most importantly, the medial verb and clause is made the head of the SR construction, rather than the final verb and clause. Secondly, a corollary of this requires that the head, or medial clause, precedes its $V[FNL]$ complement, thus reversing the head-final expectation otherwise noted in Hadiyya. Thirdly,

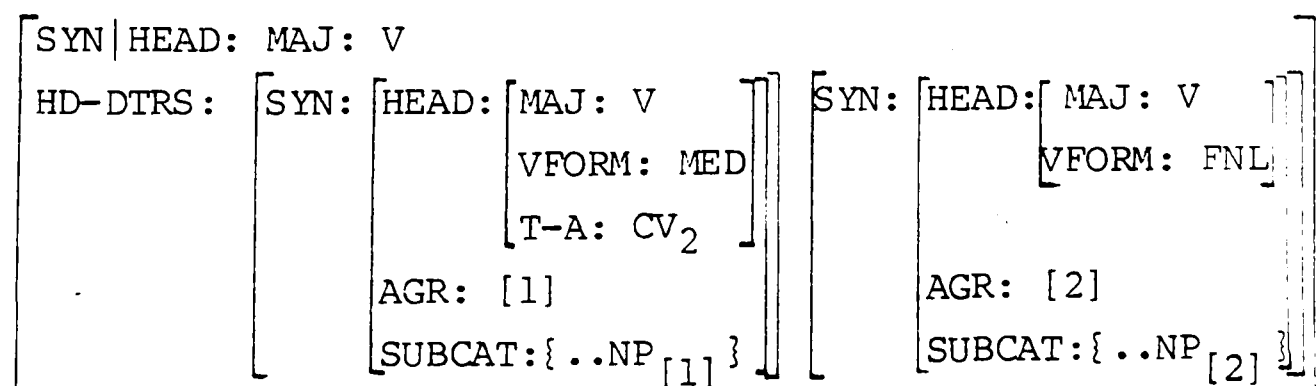
this approach implies that a similar analysis be adopted for the clause chain, or serial construction considered in section 6.1 of this chapter, when again it would meet with the same objections.

The alternative, in which the V[FNL] sign is specified to combine with a V[MED] clause has been considered as an alternative analysis in 6.1.4.1.

A difficulty with Stirling's analysis is that her acceptance of the categorial identity^{of} sentential adverbs and medial clauses is rather dubious. Roberts(1988) has argued that coordinate status be accorded the medial clause in chaining languages such as Amele of New Guinea, and, bearing in mind the qualifications in the notion coordinate which are acknowledged in 6.1.3.4 and 6.2.3.2, I strongly support his contention. It is not enough to differentiate sentential adverbs only in the semantics and the feature VFORM. It is my contention that, in terms of major categorial features, medial and final verb forms are of equivalent status [except for the matter of syntactic (in)dependence], and the same category, and I propose rather to establish their differentiation within the feature structure, as different values of VFORM = {SUB, MED, FNL}.

I will therefore take up the solution proposed above in 6.1.4 to deal with clause chaining, namely, that SR is specified via a binary coordination schema, as below:

(6.91)



As noted above, each clause in a SR sentence has its own subject (whether located contiguous with its verb and other complements

or not); I therefore consider SR here to coordinate Ss. (6.91) encodes AGR feature values as a matter of rule (or principle), and not merely as a "clause-syntax" feature marking. ie. not as a feature or morphological property. The specification V[MED; CV₂] is equivalent to any feature structure which attempts to specify overtly SR. SUBCAT and ROLE combine to ensure that the subject controls or governs its own verb. The rule format ensures that the subject referents of the two sentences will not be coreferential, although that is not specified in any way. This is a surprising result of the formalism and rule schema employed, whereby the correct verb form for the first sentence of the construction ensures a DS form. The semantics of the unified heads is simply the conjunction of the individual semantics, as is the case for the serialisation/ clause chain.

So much for the unification of the verbal head-signs in such strings; but what about their NP complements? Can verbal signs unify before they are themselves saturated signs? Consider the three verbal signs in (6.92):

(6.92)

[PHON: uwwukkaare
 SYN|LOC|SUBCAT: { NP[DAT], NP, NP[NOM] }]

[PHON: agaa
 SYN|LOC|SUBCAT: { NP, NP[NOM] }]

[PHON: goddukko
 SYN|LOC|SUBCAT: { NP, NP[NOM] }]

As a first approximation, I will adopt the basic constraint proposed in 6.1.4 to deal with SVCs. That is, all non-subject complements unify-in before the coordination stage. I further assume that null-complement is a pragmatically controlled phenomenon, with perhaps the concepts of Relevance theory (Sperber & Wilson (1986) being involved in the assignments, and not primarily a matter of syntax. If this proves wrong, the

assignments of anaphoric and cataphoric reference will certainly prove complex to formalise.

Unifying-in subject complements before S-coordination will result in surface sentences like (6.93):

(6.93)

manc₁ wo2o (uwwukkaare₁), beet₂ agukkaare₂,
(uwwaakka₁)

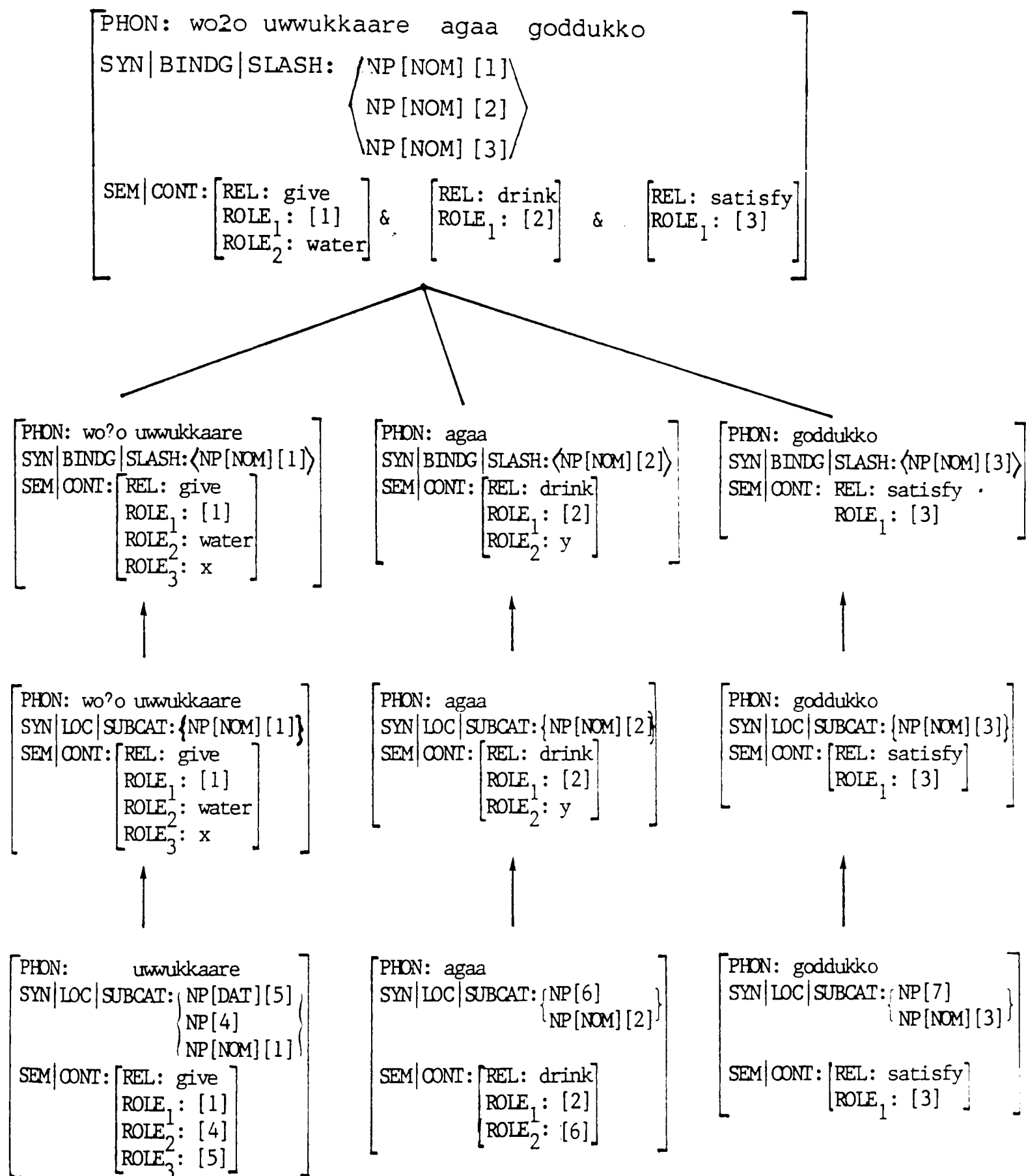
meenticco₃ liiranto2o₃

'The man gave water, the boy drank it, the woman was pleased.'

Fronted strings of subjects might be handled by two approaches. First, they might be considered to be front-shifted, dislocated constituents, using the SYN|BIND'G attribute of HPSG. Or, secondly, they might be held to simply be unified-in after S-coordination has operated.

Take the first of these. The following (6.94) models the structure of such a sentence.

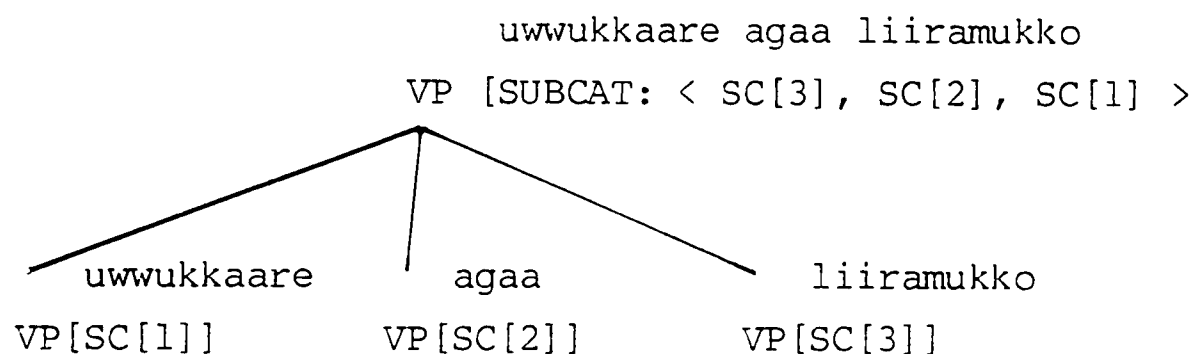
(6.94)



If SYN|BINDG is an ordered stack, and unification proceeds in a right to left fashion, and unification of the BINDG stack is the union of its constituent contents, we get the top-most sign in (6.94). This sign can then unify with suitable NPs, which will unify in the order of the stack, which then specifies the non-occurrence of crossed serial dependencies.

The second approach, in which the separate subjectless signs unify, but do not specify that subject NPs are dislocated, requires that the separate SUBCAT contents concatenate at the stage of VP coordination. Thus

(6.95)



To ensure that there are no crossed serial dependencies when this SUBCAT stack cancels requires that it be ordered. According to a major hypothesis pursued through Chapter 3, SUBCAT is a set, not an ordered stack, so specifying free complement order. The requirements of serial dependencies contradicts the hypothesis. An alternative hypothesis suggested taking Borsley's suggestion that the subject be handled by a separate attribute, SUBJ, and if this is applied here, then the union of separate SUBJ values must be an ordered stack also. This requires that SUBJ in fact be a stack-valued feature. While this is a possible option, and provides evidence in favour of a separate SUBJ attribute and an ordered SUBCAT stack, the fronting of subjects in such data crosses a sentential boundary, and is better considered as an unbounded dependency. The better solution therefore, is to opt for dislocation of subjects, which are filled by means of the binding stack.

With this preference, the formalism is now able to handle SR data such as occurs in Hadiyya.

6.3. SIMULTANEITY.

The extended discussion in the previous two sections of this chapter leave very little that needs to be said in dealing with what I here term the simultaneous sentence.

Simultaneity is encoded in Hadiyya by two clauses, in which the first takes a form in -u-yy, as noted in 2.3.2.4.1. Thus:

(6.96)

manc taake2ukkuyy, meenticco zamatto2o
man while-walking/3ms/, woman sang/3fs/
'While the man walked, the woman sang.'

(6.97)

manc taake2ukkuyy, meenticco zamattamo
man while-walking/3ms/, woman will sing/3fs/
'While the man walks, the woman will sing.'

The aspect/tense of the conjoined predicate is that of the final verb; in (6.96) the final verb is Simple Perfect, and in (6.97) it is Imperfect. But this is a consequence of the medial verb being marked to be simultaneous with the following verb; unlike the SVC, negation, interrogativity, and mood do not have scope over the medial here. Also, as (6.98) below shows, two clauses in simultaneous conjunction can permute freely without change in meaning. (6.98) is identical in meaning to (6.96).

(6.98)

meenticco zamattu2uyy, manc taake2ukko.
'While the woman sang, the man walked.'

Finally, in this construction, the subject has open reference. Thus (6.99) is equally well-formed:

(6.99)

manc taake2ukkuyy, zamarukko.
 man while-walking/3ms/, sang/3ms/
 'The man sang while he walked.'

When there is no explicit NP subject in the two clauses, and if agreement marking is the same on both verbs, the sentence will normally be interpreted as having the same subject in both clauses.

I have until now assumed that the two clauses or sentences linked in a temporal relationship of simultaneity are coordinate; some attention must be given to justify this. It should be clear from 2.3.2.4.1 that there is no readily identifiable conjunction in the -u-yy paradigm. It seems rather that a form which was historically a subjunctive in *u is suffixed by a particle yy, which cannot be readily assigned to the class of conjunctions. Note again, that Hadiyya does not exhibit readily identifiable coordinating conjunctions in VPs. Compare also the mechanism discussed in Chapter 4.1 used in coordinating identical categories in a logical-& relationship, in which I showed -u-yy forms so coordinated; clearly a single occurrence of -u-yy does not meet the canonical pattern found in Hadiyya.

The permutability of clauses noted above suggests however, that we are dealing here with a coordinate structure.

When we look at coherent text, it can be seen that simultaneity on the theme-line is encoded by the -u-yy form.

(6.100)

wit' ammane afeebe2e Ŷokkiins gatukk hakk'uwwa
 sowing time until- from- which- trees
 arrives burning survived

mine guguurukkuyyii, guguussiisukkuyyii,
 home while-lugging-&, while causing-lugging-&,

Note that in Hadiyya agriculture, seed is ploughed in as it is sown. And note also how the subject NP occurs here in the second of the two quoted clauses, and is in fact a second man, since one cannot plough and sow simultaneously! This further justifies my comment above re the open reference of the subject. A final example from the text is seen below:

(6.102)

hurbaat' murat beeddukkisam, oodo2onne hurbaata
crop cutting as-it-finishes, on-threshing-floor crop

uubusaa, mirgo2uww ihukko te2im gammaamo
laying/3ms/ oxen maybe or maned-animals

hurbaatanne kululaa2ukkuyy ganookko.
on-the-crop while-making- he-threshes.
go-round/3ms/

'As harvest finishes, he lays the crop on the threshing place, and threshes it by making horses or maybe oxen go around on it.'
[How a Farmer Works]

The evidence of permutability, and that of thematicity combine to support the assertion that -u-yy effects coordination of the predicates so conjoined.

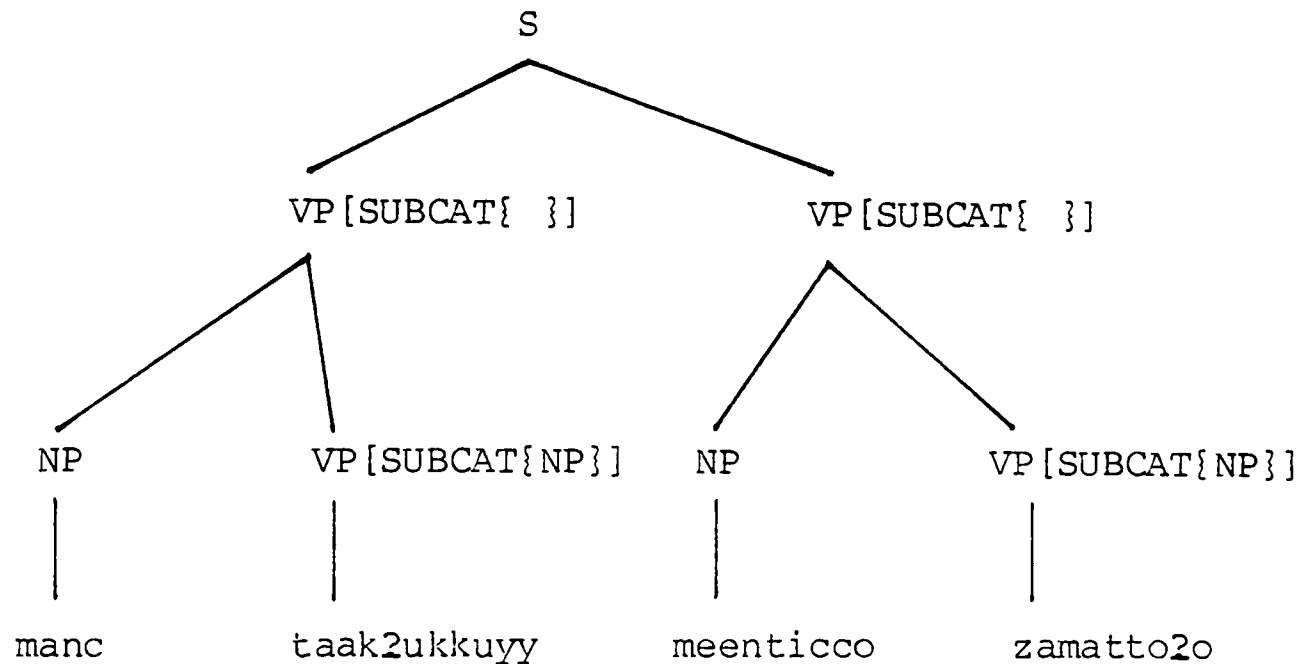
Note that the -uyy form can also bear the interpretation of an instrumental, as in (6.102) and (6.45).

Here then, I profer the suggestion that -uyy forms are sentential, and provide yet further data in support of a cosubordinate category.

The major structural features that must be accounted for are (i) the occurrence of the grammatical subject in either clause, in which case the same subject may or may not be construed for both; (ii) both clauses having its own subject; (iii) the

appearance of appropriate morphological forms on the medial verb.

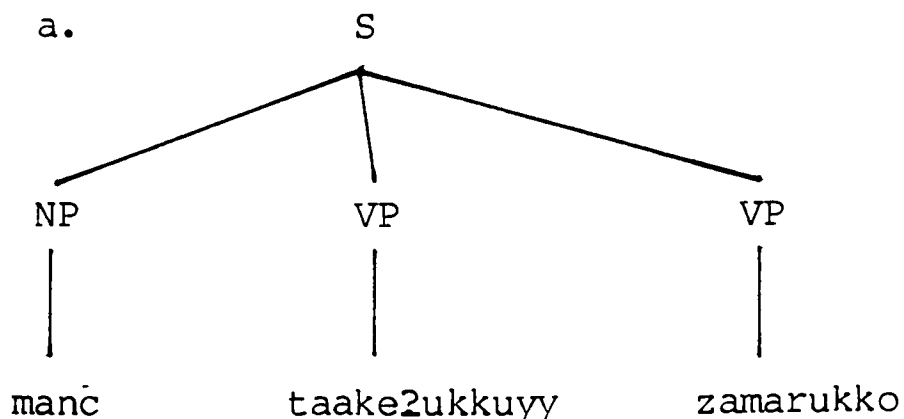
(6.103)

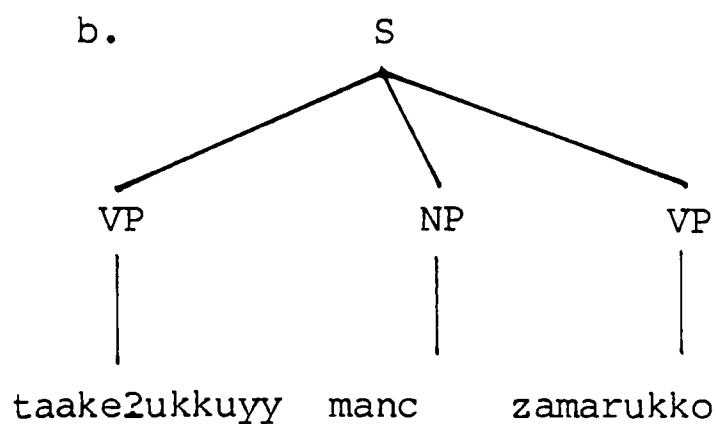


A head feature such as [SIM] is required to distinguish the -u-vy form. A form of the coordination schema, $\perp \dashrightarrow V2[SIM], V2[FNL]$ is required also, with the linear precedence rule, as before, that $X < V2[FNL]$.

If the verb is of open reference, then subject reference is pragmatically assigned, and never cross-indexed to the verb of the other clause. In that case the following trees are not well-formed.

(6.104)





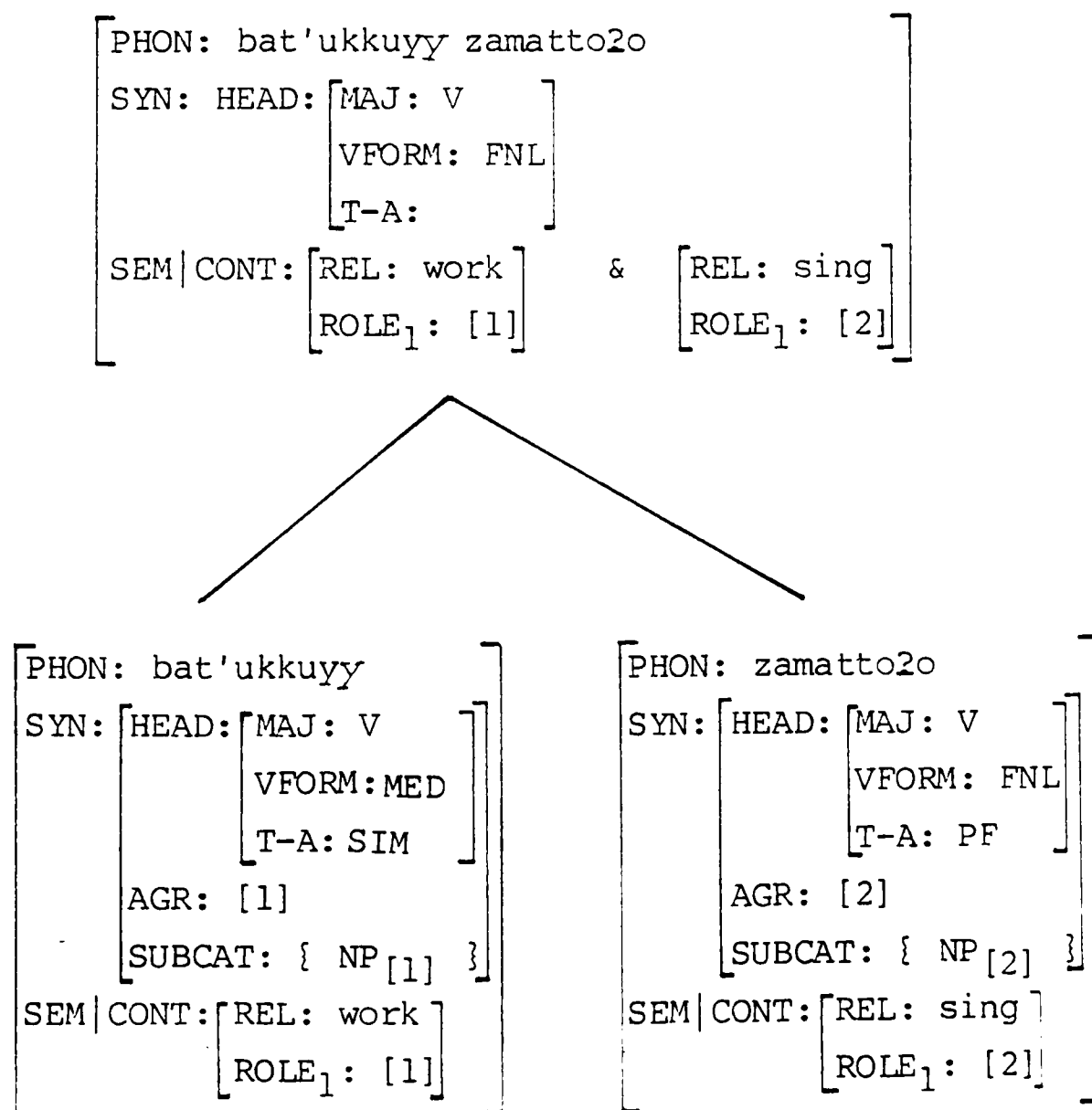
Finally, consider the example below.

(6.105)

manc bat'ukkuyy it' meenticco zamatto2o
 'While the man worked, his wife sang hymns'

The unification of verbal forms is as follows:

(6.106)



Here, to clarify the different subject reference, I have indexed the two signs separately, as [1] or [2].

Assuming then that the simultaneous sentence is handled via the coordination Rule schema, another formulation of that rule will be:

(6.107)

[SYN HEAD: [MAJ: V VFORM: FNL]									
SEM CONT: [2] & [4]									
HD-DTRS:	<table> <tr> <td> <table> <tr> <td>SYN: HEAD: [MAJ: V VFORM: MED T-A: SIM AGR: PER: [1] SUBCAT: { ..NP_[1] }</td> <td> <table> <tr> <td>SYN: HEAD: [MAJ: V VFORM: FNL T-A: PF AGR: PER: [3] SUBCAT: { ..NP_[3] }</td> <td> <table> <tr> <td>SEM CONT: [2] [REL: ROLE₁: [1]]</td> <td>SEM CONT: [4] [REL: ROLE₁: [2]]</td> </tr> </table> </td> </tr> </table> </td> <td></td> </tr> </table> </td> </tr> </table>	<table> <tr> <td>SYN: HEAD: [MAJ: V VFORM: MED T-A: SIM AGR: PER: [1] SUBCAT: { ..NP_[1] }</td> <td> <table> <tr> <td>SYN: HEAD: [MAJ: V VFORM: FNL T-A: PF AGR: PER: [3] SUBCAT: { ..NP_[3] }</td> <td> <table> <tr> <td>SEM CONT: [2] [REL: ROLE₁: [1]]</td> <td>SEM CONT: [4] [REL: ROLE₁: [2]]</td> </tr> </table> </td> </tr> </table> </td> <td></td> </tr> </table>	SYN: HEAD: [MAJ: V VFORM: MED T-A: SIM AGR: PER: [1] SUBCAT: { ..NP _[1] }	<table> <tr> <td>SYN: HEAD: [MAJ: V VFORM: FNL T-A: PF AGR: PER: [3] SUBCAT: { ..NP_[3] }</td> <td> <table> <tr> <td>SEM CONT: [2] [REL: ROLE₁: [1]]</td> <td>SEM CONT: [4] [REL: ROLE₁: [2]]</td> </tr> </table> </td> </tr> </table>	SYN: HEAD: [MAJ: V VFORM: FNL T-A: PF AGR: PER: [3] SUBCAT: { ..NP _[3] }	<table> <tr> <td>SEM CONT: [2] [REL: ROLE₁: [1]]</td> <td>SEM CONT: [4] [REL: ROLE₁: [2]]</td> </tr> </table>	SEM CONT: [2] [REL: ROLE ₁ : [1]]	SEM CONT: [4] [REL: ROLE ₁ : [2]]	
<table> <tr> <td>SYN: HEAD: [MAJ: V VFORM: MED T-A: SIM AGR: PER: [1] SUBCAT: { ..NP_[1] }</td> <td> <table> <tr> <td>SYN: HEAD: [MAJ: V VFORM: FNL T-A: PF AGR: PER: [3] SUBCAT: { ..NP_[3] }</td> <td> <table> <tr> <td>SEM CONT: [2] [REL: ROLE₁: [1]]</td> <td>SEM CONT: [4] [REL: ROLE₁: [2]]</td> </tr> </table> </td> </tr> </table> </td> <td></td> </tr> </table>	SYN: HEAD: [MAJ: V VFORM: MED T-A: SIM AGR: PER: [1] SUBCAT: { ..NP _[1] }	<table> <tr> <td>SYN: HEAD: [MAJ: V VFORM: FNL T-A: PF AGR: PER: [3] SUBCAT: { ..NP_[3] }</td> <td> <table> <tr> <td>SEM CONT: [2] [REL: ROLE₁: [1]]</td> <td>SEM CONT: [4] [REL: ROLE₁: [2]]</td> </tr> </table> </td> </tr> </table>	SYN: HEAD: [MAJ: V VFORM: FNL T-A: PF AGR: PER: [3] SUBCAT: { ..NP _[3] }	<table> <tr> <td>SEM CONT: [2] [REL: ROLE₁: [1]]</td> <td>SEM CONT: [4] [REL: ROLE₁: [2]]</td> </tr> </table>	SEM CONT: [2] [REL: ROLE ₁ : [1]]	SEM CONT: [4] [REL: ROLE ₁ : [2]]			
SYN: HEAD: [MAJ: V VFORM: MED T-A: SIM AGR: PER: [1] SUBCAT: { ..NP _[1] }	<table> <tr> <td>SYN: HEAD: [MAJ: V VFORM: FNL T-A: PF AGR: PER: [3] SUBCAT: { ..NP_[3] }</td> <td> <table> <tr> <td>SEM CONT: [2] [REL: ROLE₁: [1]]</td> <td>SEM CONT: [4] [REL: ROLE₁: [2]]</td> </tr> </table> </td> </tr> </table>	SYN: HEAD: [MAJ: V VFORM: FNL T-A: PF AGR: PER: [3] SUBCAT: { ..NP _[3] }	<table> <tr> <td>SEM CONT: [2] [REL: ROLE₁: [1]]</td> <td>SEM CONT: [4] [REL: ROLE₁: [2]]</td> </tr> </table>	SEM CONT: [2] [REL: ROLE ₁ : [1]]	SEM CONT: [4] [REL: ROLE ₁ : [2]]				
SYN: HEAD: [MAJ: V VFORM: FNL T-A: PF AGR: PER: [3] SUBCAT: { ..NP _[3] }	<table> <tr> <td>SEM CONT: [2] [REL: ROLE₁: [1]]</td> <td>SEM CONT: [4] [REL: ROLE₁: [2]]</td> </tr> </table>	SEM CONT: [2] [REL: ROLE ₁ : [1]]	SEM CONT: [4] [REL: ROLE ₁ : [2]]						
SEM CONT: [2] [REL: ROLE ₁ : [1]]	SEM CONT: [4] [REL: ROLE ₁ : [2]]								

The semantic attribute of the unified mother will simply be a conjunction of the semantics of the individual signs, as for SVC and SR.

Note that this is set up to account for a bi-clausal sentence. If two simultaneous clauses are coordinated, they are coordinated via canonical coordination, with long final vowels, as explained in Chapter 4.1.3.

Here again there is the question of constraining the order in which various constituents of these sentences are unified; any of the three hypotheses set out in Chapter 3 will suffice, with no further evidence to help choose between them.

6.4. SUMMARY.

In this chapter I have justified recognising three predicate coordinating structures. I have justified recognising a

serialisation/clause-chaining sentence; and switch reference in a coordinative structure, as well as within complementation; and thirdly, a simultaneous event device. These are established as follows:

SVC	coordinate VP }	single subject
	coordinate V }	reference
SR	coordinate S	
	subjunctive complement	
Simult.	coordinate S	

HPSG formalism has been applied to each to obtain the variety of surface constituent order found; the constraining of the subject in SVCs; and the fronting of subjects in SR, avoiding crossed serial dependencies.

The three hypotheses (Single Rule, Separate Subject, and Unordered Subcat) would all seem to apply equally well. Evidence was uncovered which supports a separate subject feature structure in Hadiyya, thus adopting Borsley(1987)'s proposal. Also, the decision to opt for a separate feature for the subject rather weakens the attempt to handle free constituent order via unordered subcat; a revision of the basic rule for cancelling SUBCAT should allow free order, without necessitating this. Whether SUBCAT is ordered or free must then be justified on other grounds; either aesthetics, or the desire that HPSG should reflect hierarchical organisation in the semantic predicate-argument structure rather than in the syntactic obliqueness listing established by an ordered SUBCAT.

POSTSCRIPT.

It is time to look back at what has been achieved. In the Preface I set out two broad aims, a descriptive, and a theoretical one. The descriptive one I believe I have met, as I have considered in some detail different aspects of Hadiyya grammar ranging from the word to the clause chaining/serialisation and switch reference phenomena of the complex sentence, making available a largish fragment of a language whose syntax is previously unreported. The detailed description of serialisation, or clause chaining, and of switch reference, in both coordinate and complement structures, are of particular interest.

The theoretical aim is less quickly evaluated.

Phonology and morphology were not central to my concerns, and I have made only brief suggestions in Chapters 2 and 3 as to how the HPSG sign might be set up within the lexicon. About the shape of a phonological component I have said nothing, although the interaction of phonology and syntax which is evident in the data on canonical coordination, points up the need for a phonological component orthogonal to the syntactic and semantic ones, and raises questions about the division of labour between lexicon and syntax. If there genuinely is no asymmetry between interpretive and generative components of the sign, then such interactions potentially, but not necessarily, lead HPSG to contradict the lexicalist position on phonology.

Agreement and the resolution of agreement values were considered at length through the chapters in Part I. A solution to the particular agreement problems of Hadiyya was proposed, and some proposals developed concerning resolution issues which contribute to the attempt to formalise these in a framework with universal validity.

In discussing the freedom of order displayed among constituents of the (simple) sentence, three hypotheses were set out: those

of a separate SUBJ feature, following Borsley(1987); the single Rule, unifying all complements as sisters; and unordered SUBCAT. The third of these was argued for in Chapter 3, not only because it offered an interesting approach to constituent freedom, but also because it suggested predicate-argument structure could be incorporated into HPSG as a primitive. It was used to formulate data in the later part of the work. Following these hypotheses through into Chapter 6, the nature of predicate coordination provided some support for Borsley's proposal, but it would appear that unordering SUBCAT does not achieve anything that adopting a single rule cannot do. Understood restrictively, this suggests that SUBCAT continue to be an ordered stack in HPSG; with a single rule unifying-in all complements as sisters, and ordering these by a syntactic attribute ORDER, a non-configurational syntax presents no particular problems. The same restriction applied to Gunji(1987), however, has serious repercussions: if SUBCAT is ordered, he cannot hold onto his binary phrase structure rule, and a configurational syntax. On the other hand, I still find it worth defending hierarchy in the semantic attribute, and allowing SUBCAT to be unordered.

The null-complement phenomenon was also considered in Chapter 3, and it was suggested that free gaps be handled by unifying-in an open variable into semantic ROLES, rather than set up lexical signs with zero phonology.

A further general goal set out in Chapter 3 was the reduction of phrase structure to the single rule $X \rightarrow Y^*$. In general, this is achievable for the unifying-in of adjuncts and subcategorised categories, and for the canonical schema for coordination discussed in Chapter 4. It is not easy to see how it applies in HPSG to the coordination of non-identical categories, for example the $[V[MED]]^*[V[FNL]]$ schema required in Chapter 6.

Here, and elsewhere in these chapters the Head Feature Principle, so fundamental to a Head-driven PSG, runs into difficulties. In Chapters 2 and 6 especially, the assumption of a single, unique head in a constituent was questioned; again the

clause chain and other structures of Chapter 6 are examples of dual or multiheaded structures, in which the syntactic status of two co-heads is not identical, and may differ by only a single feature-value. If the solution of Proudian & Goddeau(1987) were adopted, a single PS rule could be maintained, in which violations of unification were permitted, and marked as Confl^{*}; this I rejected on the grounds that it adds further power to an already powerful unification operation. In Chapter 6 I adopted a second PS rule, specifically allowing two non-identical categories to unify; to pursue the reduction of phrase structure to a single rule would require the HFP to be defined in such a way that it can select among head features in some way. This last option was not pursued. This problem apart, HPSG handles clause chaining and switch reference in a way that falls out naturally from the formalism.

These, then, are among the theoretical issues raised; their formalisation within HPSG was pursued in an open-ended, rather than in a polemic fashion, with analytical options many times being left open.

Appendix I.

Syntactic Attributes and Values Proposed for Hadiyya
-- a summary.

Syntax Attribute-values:

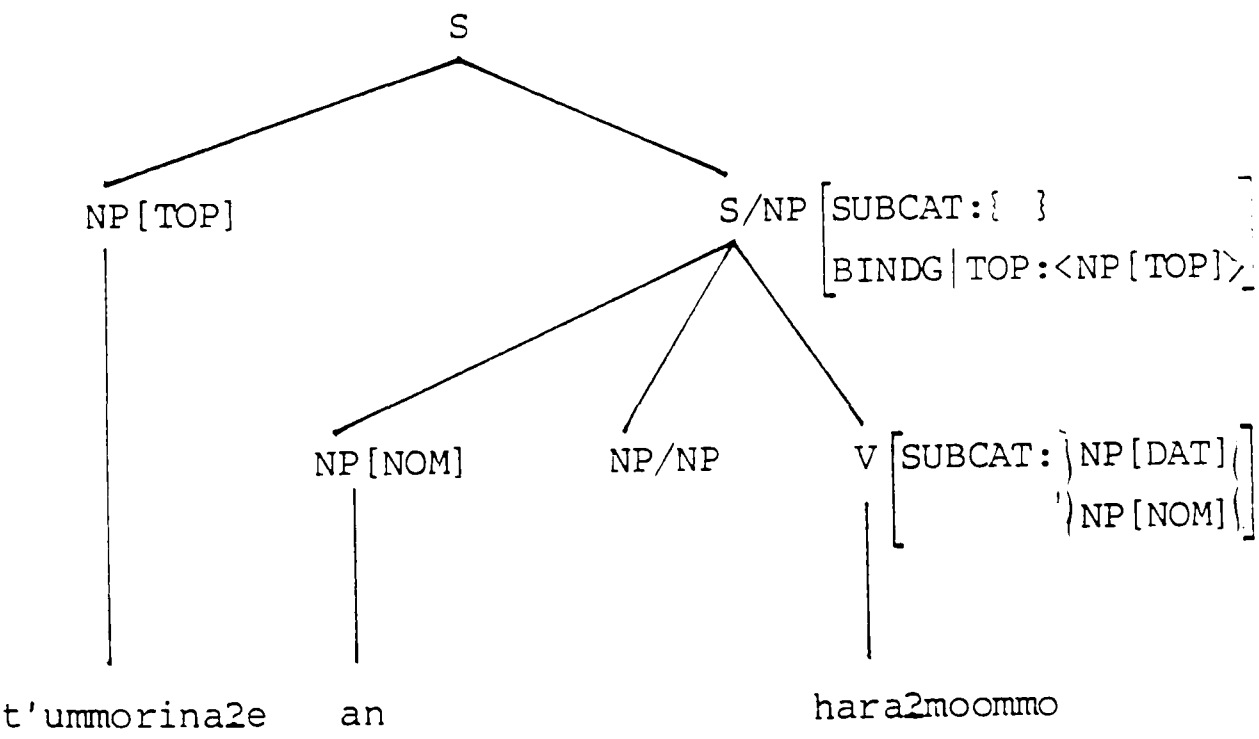
```
SYNTAX: LOCAL: HEAD: MAJ: { N, V }
          VFORM: { FNL, MED, SUB, INF, COMP, CONJ }
          T-A: { PERF, IMPF, PRES, SIM, }
          MOOD: { IDC, IMP, JUS, SJ }
          DUR
          NZR
          COHEAD:
          ADJUNCTS:
          HFORM: { PRD, +, - }
          CASE: { NOM, ABS, DAT, ABL,
                  COM, LOC, ADD }
          AGR: PER: { 0, XSP, XAD }
          NUM: { SING, PLU }
          GDR: { MASC, FEM }
          SUBCAT:
          LEX: { + - }
          BINDING: { SLASH, QUE, REL }
```


Appendix II.

In this appendix I illustrate briefly the general structural analysis adopted for Topicalisation, Relativisation, Clefting, without pursuing the question of how these are specifically incorporated into HPSG.

1. Topicalisation.

Example: t'ummorina2e an hara2moommo
 TUMMORO, I I-will-help
 'Tummoro, I'll help'

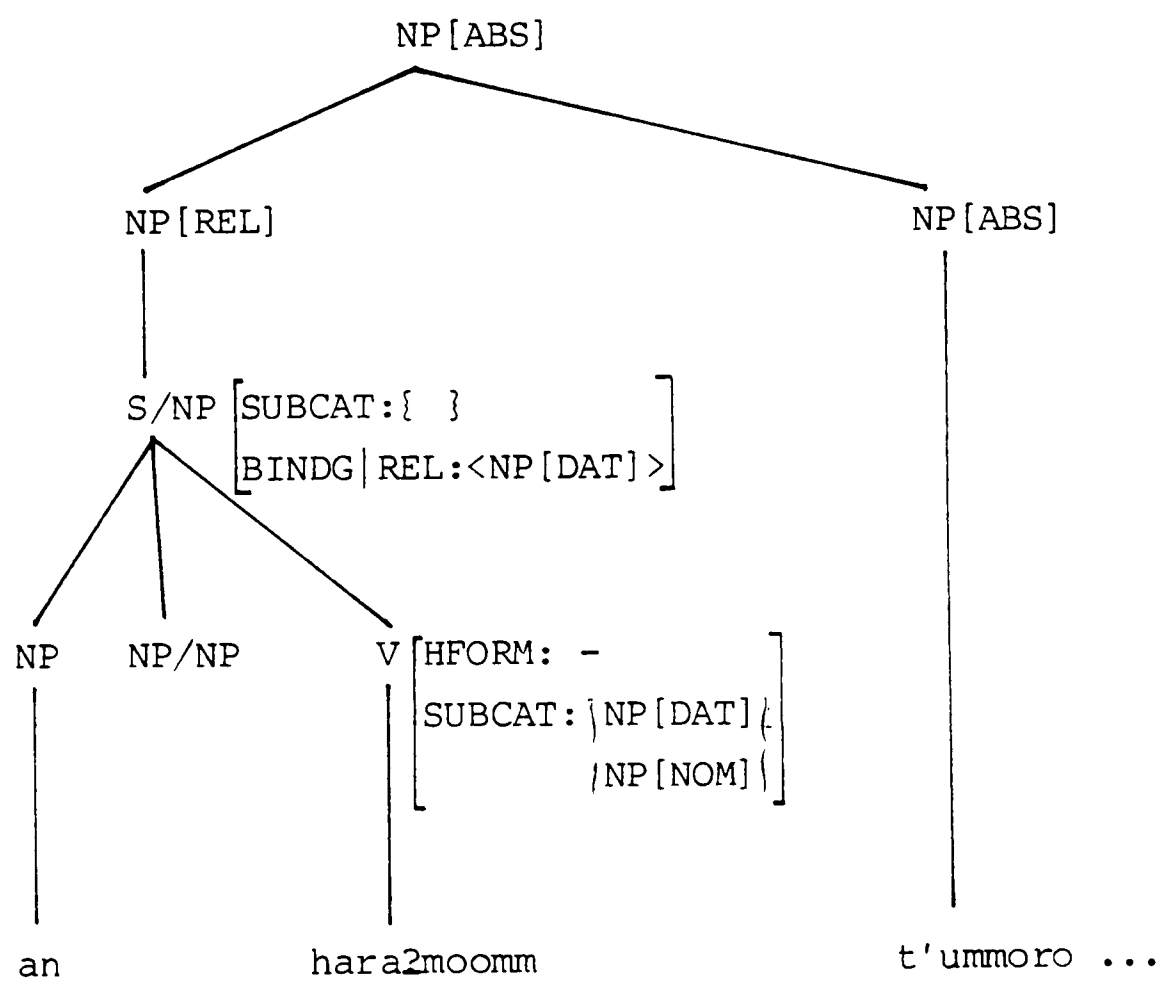


2. Relativisation.

Example: an hara2moomm t'ummoro ...

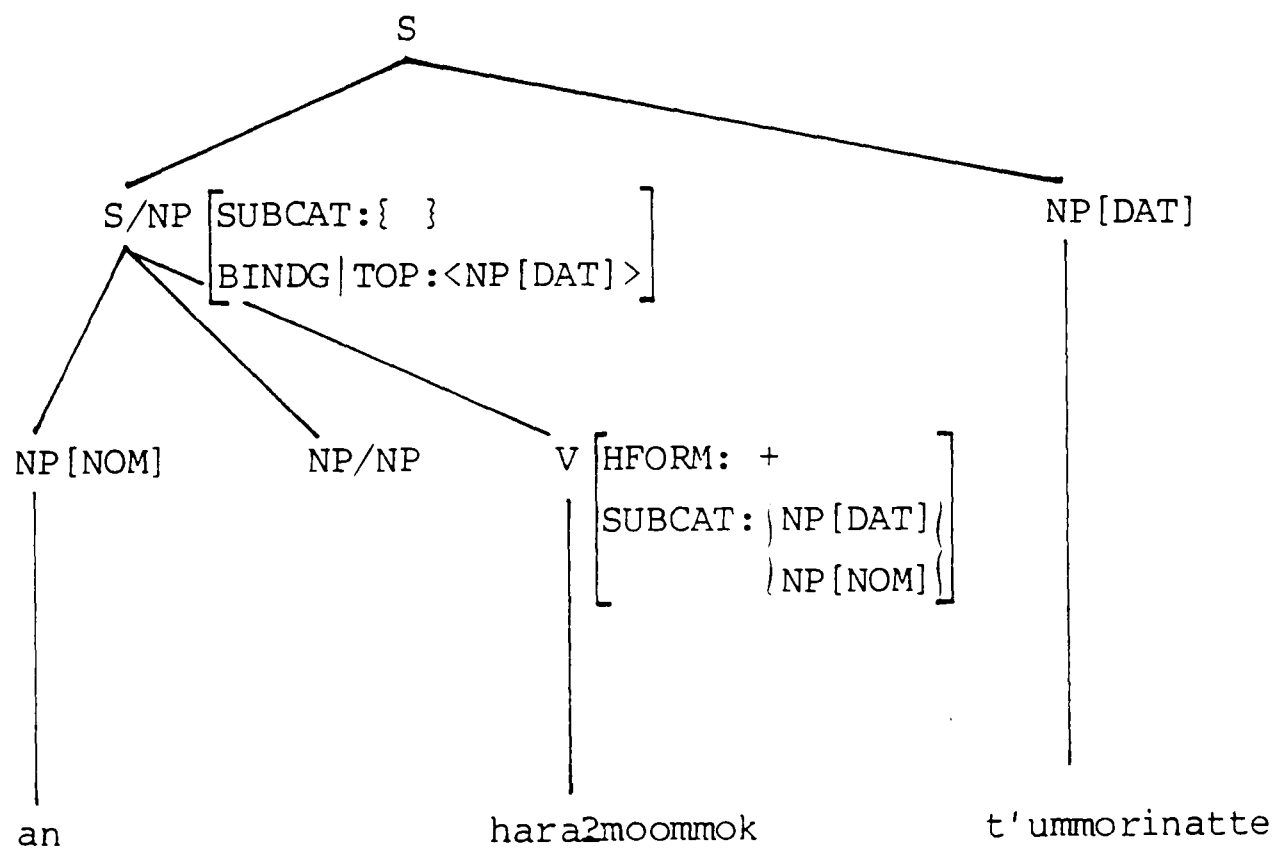
 I I-will-help Tummore

 '... Tummore whom I'll help'



3. Clefting.

Example: an hara2moommok t'ummorinatte
 I who-I'll-help (is)-Tummoro
 'It's Tummoro that I'll help



Appendix III.

I include here several short sample Hadiyya texts, which illustrate in spontaneous speech many of the grammatical features which form the burden of discussion in the preceding chapters. Each text is accompanied by a word by word gloss, and followed by a free translation. I have numbered each sentence for easier reference.

1. Bu2 Mucco2o Hinkid Sarakkamda2e.

Buo Mucho How You Cook

1. hundiinsem gaassaa bu2oom iillaansamaa gudookko.
From-all preceding buo being-sieved it-prepares.

2. ee lasage giira giirakka2a gala2a giiranne kaasakka2a
That after fire kindling griddle fire-on setting

gala2oom iibboo ammane ee iillansamu bu2o ee iibbu
griddle heats time that sieved buo that heated

gala2anne issakka2a haankurakkamo.
griddle-on putting you-will-stir.

3. ookim haankuramaa li2oo ammane Ÿaate2enne toconne
That-& having-been-stirred grows time dish-on side-at

fissakka2a wo2o c'ecc'efakka2a ifiisakka2a dissakkamo.
putting-down water sprinkling covering you-will-put.

4. itt'im siggaa wo2ooma t'uut'aa lasage k'ure2enne hof
It-& cooling water absorbing after pot-in little

wokicoom edakka2a giiranne kaasakkamo.
water adding fire-on you-will-set.

5. oo wo2im hoff ammane danaamisa Ÿuffaa2akka2a murakka2a
That water boils time nicely chopping cutting

k'uk'ul Ÿaana ee huffu wo2onne edakkamo.
raw cabbage that hot water-on you-will-add.

6. itt'onnem enjuwwaa sook'idoo barbaro2o eddokka2a danaamisa
It-on-& spices-& salt-& pepper adding nicely

buuzalaa li2oo ammane ee han hanenne ee haankuramu bu2o
cooking grows time that over-the-top that stirred buo

danaamisa bibbizakka2a edakkamo.
nicely crumbling you-will-add.

7. ee lasage k'app'aa2akka2a k'ut'umo2inne aadaad k'asakka2a
That after carefully spurtle-with poke-poke stabbing

mat k'at'a buuzalona k'ure2 suume ifiisakkamo.
one amount for-cooking pot's mouth you-will-cover.

8. ookim mat k'at'a buuzalaa lasage k'app'aa2akka2a
That-& one amount cooking after carefully

hamaaransakkamo.
you-will-stir.

9. eehid ihaa li2aa lasage Ÿaate2enne fissakka2a buuro
Like-that being growing after bowl-in putting butter

eddokka2a hamaaransakka2a itakkamo.
adding stirring you-will-eat.

How to Cook Bu Mucho.

1. Before anything else, the buo will be prepared by sieving.
2. After that, you will kindle a fire, and put a griddle on it, and when that griddle heats up, you will put the buo on the hot griddle and stir it around.
3. And when that has been fully stirred, you will put it aside in a dish, sprinkle it with water, cover it and let it stand.
4. After it has cooled and absorbed the water, you will add a spot of water to a pot and set it on the fire.
5. When that water boils, you will add some well chopped raw cabbage.
6. When it is fully cooked, you will add spices, salt and pepper, and sprinkle it over the top of the stirred buo.
7. After that, you will poke it gently with a spurtle a couple of times, and cover the pot so that it might cook.
8. After it has cooked briefly, you will carefully stir it round.
9. After it is ready in that way, you will put it in a bowl, add butter, and eat it.

mat abuullaanc hinkid bat'ooda2e.

one farmer how he-works.

1. mat abuullaanc hinkid bat'ooda2e hoffotam an kuroommo.
One farmer how he-works a-little I I-will-tell.
 2. mat abuullaanc garukkok hakk'o2l bakkonnett ihulas.
One farmer who-lives forest nearby if-it-is.
 3. lutt'eka bill agananne manninne geja aagaat ihukko;
First Dry months-on men-with gang entering it-will-be;
- te2im mullatem ihukko; it' oddomacc hundam uttinaa
or alone it-will-be; his body whole thorns-to-&
- t'aarinaa uwaa lobakata biinc'e2ukkuyy hakk'a baccookko.
iron-to-& giving greatly while-sweating trees he-will-clear.

4. odim t'een ga2neena duubukkisa moo2ulas, t'een
Also rain for-beating that-it-clouds if-he-sees rain

ga2neena illageen baccukkaanonne šokaa uwwookko.
for-beating before on-what-he-cleared burning he-will-give.

5. wit' ammane afeebe2e šok gatukk hakk'uwwa mine
Sowing time reaches burned remaining wood home

gugguurukkuyyii gugguussisukkuyyii t'anu k'at'inne
while-lugging-& while-causing-lugging-& able by-amount

gugumuwwa t'ok'olukkuyy egerookko.
tree-stumps while-rooting-out he-watches.

6. wit' amman afoo ammanem, dawwa issaat ihukko;
Sowing time arrives time workmeals he-makes it-will-be

te2im manninne geja aagaat ihukko; wodda2 baccaa
or men-with gang entering it-will-be; the same cleared

šokkiisu beyyo korcaatii korcosaatii
which-he-burned place ploughing-& causing-ploughing-&

wit'ookko.

he-sows.

7. ee lasage odim wit'u hurbaata mooc bi2isoo bee2isa
That after also wh-sowed grain animals spoil that-not

wit' woronne godo2o bat'aa ballaa hiimoo egeru beelas
field inside hut making day-& night-& watch if-not

it' hurbaata mooc bi2isaa urookko.
his crop animals spoiling he-prevents.

8. ee bikkina hurbaata wit'u ammanii ki2isaa hurbaat
That because crop he-sowed time-from starting crop

afaa muraa hakk' worii gibiseebe2e afeebe2e k'ott'aa
arrives cutting forest in-from he-stores until strongly

egerookko.

he-watches.

9. ihukkaaremdu guff uullanne garukk manc ihulas;
But grass land-on who-lives man if-it-is;

naase aganii tasaasa agana afeebe2e wonnanninne
Nahase month-from Tahsas month until digging-sticks-with

abuullookko.

he-farms.

10. ee lasage hagay t'een daba2leebe2e bill eelliinc hundim
That after Wet rain return-until Dry sun all

app'isaa lasage, odim hagay t'eenim mat k'at'a k'ufisaa
scorching after also Wet rain one amount

lasage dimmarooma hedinne kiicookko.

after turf-clods hoe-with he-hoes.

11. kiicimma guullaa lasage odim wit'akkam amman afeebe2e
Hoeing completing after also you-sow time until

mirgo2uwwinne hark'otookko.

oxen-with he-ploughs.

12. wit' amman afoo ammanem manninne geja aagaat ihukko;
Seed time arrive time men-with gang entering it-was;

te2im it' abaroosa amadaa mirgo2inne hark'otukkuyy
or his household holding oxen-with while-ploughing

mat manc hurbaata wit'ookko.

one man seed he-sows.

13. odim mulek maadaabir wit'ookko.

Also another fertiliser he-sows.

14. ee lasage gato k'at' mann mirgo2uww lasonne aagaa

That after few amount men oxen behind entering

k'offarookko.

he-ploughs.

15. hurbaat muratt' aganim annico manninne geja aagaa

Crop cutting month owner men-with gang entering

murookko.

he-cuts.

16. odim it' abaroosim far^ysimuwwa diinat bi2isoo bee2isa

Also his household domesticated beasts spoil that-not

witt'aa2la2ah katta2a hegeegonne gugguuttamo.

collecting tying to-homestead they-will-lug.

17. annicim hiimo ihukko ball afu ammane hundam wodda2

Owner night it-is day arrive time all the same

witt'u hurbaata naarookko.

collected crop he-will-heap-up.

18. odim hurbaat' murat' beeddukkisam oodo2onne

Also crop cutting finishes-as threshing-place-on

hurbaat uubusaa mirgo2uww ihukko; te2im gammaamo

crop dropping oxen it-will-be; or maned-ones

hurbaatanne kululaa2ukkuyy ganookko.

crop-on while-turning he-beats.

19. ee lasage ha2n hurbaat ganamukkisa moo2ulas

That after upper crop been-beaten-that if-he-sees

ganoo diinate fissaat ihukko; te2im woronne he2lonam
 which-beat animals putting-out it-is; or inside being

at'urunsukkuyy bura2 fissookko.
 while-cleaning chaff he-puts-out.

20. Ha2nekii woro2lekii hundim danaamisa ganamaa lasage
 Top-of-& inner-of-& all nicely been-beaten after

diinatooma biiranne hooraa at'urunsookko.
 beasts outside leaving he-cleans.

21. hafac bee2ulas toconne giira giirookko.
 Wind not-if beside fire he-kindles.

22. hafac hafacu amman hundam at'urunsaa mucc'ussookko.
 Wind blows time all cleaning he-purifies.

23. ee lasage gammaaminne mine gugguuraa secuwwanne
 That after maned-ones-with home lugging barn-in

aagisookko.
 he-makes-enter.

How A Farmer Works.

1. I will tell briefly how a farmer works.

2. It might be a farmer who lives beside the forest. 3. In the Dry Season it may be he goes in with a gang of men; or it may be alone; giving his whole body up to thorns and steel, by sweat he will clear the trees. 4. And if he sees it clouding over for rain, before it rains, he will burn what he cleared. 5. Until sowing time comes, he roots out stumps, and lugs home - and gets others to lug home - wood which withstood the burning, and watches.

6. When sowing time comes, workers' meals he makes, it may be; or maybe going in with a gang of men, he ploughs and gets ploughed the previously mentioned place which he cleared and burned, and sows. 7. And after that, if he doesn't watch day and night so that wild animals do not spoil the sown grain, he makes a shelter within the field and prevents them spoiling his crop.

8. Because of that, starting from sowing time, until the crop ripens for cutting, he watches well that they flee from the forest.

9. But if it is a man who lives on grasslands; from August until December, he cultivates with digging sticks. 10. After that, until the summer rain comes, after scorching in the Dry Season sun, after it is softened by a small quantity of summer rain, he hoes over the turfs.

11. After completing the hoeing, he ploughs with oxen until sowing time. 12. When sowing time comes, he may go in with a gang of men, or taking his household, while he ploughs with oxen, one person will sow the seed. 13. He also "sows" fertiliser. 14. After that, men will come in behind and plough a little. 15. At harvest time, the owner with a gang of men goes in to cut. 16. And, that domesticated beasts do not spoil it, his household gathers it and lugs it to the homestead.

17. The whole time, night and day, he guards that gathered crop. 18. And as harvesting finishes, he drops the crop on a threshing place, and maybe with oxen, or with maned animals he will thresh the crop walking them round and round. 19. After that, if he sees that the crop on top has been threshed, he may put out the threshing animals, or for doing the crop underneath by clearing out the straw, he puts them out.

20. After that on top and that underneath has been well threshed, leaving the beasts outside, he winnows it. 21. If there is no wind, he kindles a fire alongside. 22. All the time the wind blows, he winnows it clean. 23. After that, with horses & donkeys lugging it home, he puts it in the storehouse.

A Morning Prayer.

1. hecc k'araar, ni Waa2a, keese galatt'inoomulla.
Life curer our God you we-are-praising.

2. ka ammanenne neese galatt'ineena illageenim
This time-at we we-praise before

at galatt'antaattohane.
you have-been-praised.

3. neese hanzo2nim at hassaa siiddaattohane.
We before-wanting you wanting you-sought.

4. Adaamee Hewwaanee bi2isoo2 bi2iŝinne doolii doolina
Adam-& Eve-& spoiling wrong-by from-age to-age

biccina gundamaa baat'iil minenne Ŷet'aaninne
for-spoiling we-prepared sin-of house-in Satan-by

karamaa he2nummo.
we-were-bound.

5. ni Waa2a, matem ki beeto -- iittito Yesus Kristosa
Our God one your boy who-you-love Jesus Christ

-- ni bikkina yitaa ki2laa hank'iname ka uullanne
our sake saying rising truly this earth-on

dillaa hawwo aa2oo2isa ni hawwoom
coming-down suffering that-he-takes our suffering

it' hawwinne guullukko.
his suffering-by he-completed.

6. ni lehimè it' lehinne beeddukko.
Our death-& his death-by it-finished.

7. neesem hecca siitt'inummo.

We-& life we-got.

8. hank'o2 ni Waa2a, ki sumii ki annoomii bakiisu
Truly, our God, your name-& your fatherhood-& give-rest

bikkinaa egeru bikkinaa doo2litaas lasagem ka uullanne
because-& keep because-& you-chose after this earth-on

haasisoo luc hundam gudissaa ki t'umminne egettaa
necessary thing all preparing your peace-in you-keep

ki2laa neese maase2lit bikkinaa beeddobee2 k'int' k'int'aakko
after us you-bless because -& without-end fold folded

galat kiina ihona.
praise to-you may-be.

9. ni Waa2a, at ni wodanonne yoo hundam lakk'ohane;
Our God, you our heart-on which-is all you-know;

ni hoong hundam lakk'ohane; ni malaayyem lakk'ohane.
our weakness all you-know; our strength you-know.

10. keese bee2e odim mahame issineena t'annoommoyyo.
You without also nothing for-doing we-are-not-able.

11. hank'iname ni Waa2a, ki keesam ayyaan hiimoo ballaa
Truly, our God, your holy spirit night-& day-&

hund ammanem bak'isu beelas ni edde2nummok maar
all time if-he-didn't-waken our wh-we-wear flesh

hoogginco; uumboommisam lank'oommoyyo.
is-weak; that-we-fall we-don't-know.

12. ki awwaadinam gundaa geelleena t'annoombee2isam
Your service-for preparing for-running that-we-are-not-able

atim lakk'ootto.

you you-know.

13. hank'ina ni Waa2a, ki keesam ayyaana neesenne
Truly our God, your holy spirit on-us

annanniconnem issitaa ki2laa ki minenne k'ot'inaa
each putting rising your house-in we-strongly

he2noommisina at hara2me.
for-that-we-live you help!

14. biijaall Waa2a, kaba odim, uuntinoommotte.
Generous God, now also, it-is-we-are-praying.

15. lobakat beyyonne ama2naan k'ac'oolla; ki angiinsem
Many place-on believers are-weeping; your hand-from

uuboolla; afa2laacca daba2loolla.
are-falling; spiritism are-turning.

16. waa2a, eek-keeno hundame ki haaninne keesam ayyaaninne
God, those all your holy spirit-with

mikmikaa2laa nakkitaa uubamuk beyy hundiinsem
stirring touching have-fallen place all-from

ki2isoo2isina keese uunt'inaammo.
for-that-you-raise you we-have-begged.

17. hecc k'araar, ni Waa2a, ni baat'iilo hundikame
Life's curer, our God, our sin all

dunamukk Yesus Kristos t'iig bikkina yitaa ki2laa
wh-was-shed Jesus Christ's blood because saying rising

SiinSiitona uunt'inoommulla.
for-cleansing we-are-praying.

18. karamu abbaayyuww bikkina, Waa2a, hank'ina, ee yoomame2
Tied brothers about, God, in truth, that wh-they-are

beyy hundannem, at k'ot'issoo2isinaa kiin annann
place all-in, you for-that-you-strengthen to-you separate

ihamobee2isa maase2loo2isina keese uunt'inaammo.
that-they-not-be for-that-you-bless you we-have-asked.

19. odim, ee2isam biijaall Waa2a, ka uullanne ki wangel
Also, like-that generous God, this land your gospel

lobakat beyyo afukkoyyo.
many places didn't-reach.

20. hank'ina atette, t'antoottok; tuuns woronne yooll
In-truth it's-you who-are-able; dark inside who-are

keenina c'aakka issitoottok atette.
to-those light you-who-make it's-you.

21. ikk bikkina ki wange2l c'aakk alam hundannem
you-are because your gospel light world on-all

afoo2isina alam hundim keesenne ama2naa
that-you-make-reach world all on-you believing

gatoo2isina matem ki beetonne ama2naa ki2aa t'umman
for-that-you-save only your with-boy believing rising peace

keen siidoo risit iima2n uʒeet'at' adila2n uulla
those will-find inheritance above rest kingship land

aagoo2isinaa ee beyyo siitt'oo2isina
for-that-they-enter-& that place for-that-they-gain

tiiro aa2leena keese uunt'inaammo.
 understanding for-receiving you we-have-asked.

22. ki haanonne fek'aad ihona.
 Your on-top permission let-be.

23. biijaall Waa2a, at t'antoobee2 luc mah luccim bee2e.
 Generous God, you not-able thing what thing is-not.

24. jabbinne amadamaa hawwoo keen yookko;
 In sickness who-are-seized who-troubled those are;

Yset'aan karu keen lobakat keen yookko.
 Satan tied those many those are.

25. ni Waa2a, eek-keeno Yset'aa2n karatii(nse) at tire!
 Our God, those Satan's tying-from you loosen!

26. jabbu keen hundinam at ki k'araare uwwitoo2isinaa
 Who-sick those to-all-& you your medicine so-th-you-give-&

ki k'araare uwwitaa ki2laa odim fayyiisoo2isinaa
 your medicine giving rising also for-that-you-heal-&

keese uuntinaammo.
 you we-have-asked.

27. hecc k'araare, neese t'ale2 kaballa ama2ninum mann
 Life's curer, we alone today who-believed people

inkoombee2isina ki waar afeebee2em k'ot'ina
 for-that-we-are-not your coming reach-until to-strength

uullinoommisina at bak'aa2e.
 for-that-we-stand you awaken.

28. ki saga2l miY ni woronne siidamoo2isina keese
 Your word's fruit our inside for-that-is-found you

uunt'inoommulla.

we-are-asking.

29. biijaall Waa2a, hank'inam ki wange2l sagar lobakat
Generous God, truly, your gospel's word many

beyyonne batt'amoolla.¹
places-in is-being-spread.

30. ki wangela bat'eena yitaa ki2la2a taake2antam keen
Your gospel for-working saying rising walking those

yoo2o.

are.

31. biijaall Waa2a, eekkem hundame kiihaaninne keesaam
Generous God, that all with-yours holy

ayyaaninne hundam at maase2laa ki2laa awwonsitona
spirit-with all you blessing rising for-following

uunt'inoommotte. 32. macc'eess bikkina galat aa2ee.
it-is-we-ask. Wh-you-hear because praise accept

33. lasaanc afeebee2em at egere. 34. t'umma2n lambe2enne
Last reach-until you watch. Peaceful amidst

daba2lamo k'araar Yesus Kristos summinne. Amen.

who-turns curer Jesus Christ in-name. Amen.

1. Whether the Ethiopic transcription should be transcribed here with a single t' or a geminate tt' I cannot be sure in the absence of checking orally. If it were bat'amoolla, that would translate 'is-being-worked.'

1. God, our Saviour, we praise you.

2. And before we praise you at this time you have been getting praised. 3. Before we wanted you, you wanted and found us. 4. We were ripe for spoiling eternally by the wrong which Adam and Eve did wrong, and we were bound by Satan.

5. Our God, your only son, Jesus Christ whom you loved, for our sake, truly coming down to this earth, that he might he receive suffering, our suffering by his suffering he completed. 6. And our death by his death he finished. 7. And we got life.

8. Truly, our God, because your name and your fatherhood give us rest, and because you keep us, and because you bless us, having prepared everything necessary for us on this earth and kept us in your peace, may there be manifold praise to you.

9. Our God, you know all that is in our heart; you know all our weakness; you know all our strength. 10. Indeed, without you we are not able to do anything. 11. Truly, our God, our flesh is weak if your holy spirit didn't stir us up night and day; we don't (even) know whether we will fall. 12. You know that we are not able to run to do your service. 13. Truly our God, having put your holy spirit on each of us, help us to live enthusiastically.

14. Generous God, it is for now also we are praying. 15. In many places believers are weeping; they are falling from your hand they are turning to spiritism. 16. God we have asked that, touching and stirring with your holy spirit, you will raise all those up from where they have fallen.

17. Saviour of life, our God, we are praying for cleansing having said, "for the sake of Jesus Christ's blood which was shed for all our sin."

18. About brothers imprisoned, God, truly, we have asked that

you strengthen them in every place where they are, and that you bless them that they be not separate from you.

19. Also, in the same way, generous God, many places in this land your gospel hasn't reached. 20. Truly, it's you who is able; it's you who makes light for those who are in darkness.

21. Because you are, that you make your gospel's light reach all the world, that you save all the world by believing on you, and that they enter the inheritance above which the peacable find, heaven's rest, after believing on your only boy, and that they gain that place, we ask you that we might accept your will. 22. Let it be in your will.

23. Generous God, there is nothing you cannot do. 24. There are those who are taken in sickness; there are many whom Satan has tied. 25. Our God, loosen them from Satan's tying!

26. We have asked you that you give your cure to all those who are sick and that after giving your cure that you heal them also.

27. Saviour of Life, awaken us so that we stand in strength until your coming, and so that we are not the only people who believe today. 28. We ask you that the fruit of your word is found within us.

29. Generous God, truly, the word of your gospel in many places is being spread. 30. There are those who are travelling in the work of your gospel. 31. Generous God, we ask you to follow all that, blessing all which is yours with the holy spirit.

32. Accept the praise according to what you hear. 33. Keep us until the last time. 34. In the name of the Saviour Jesus Christ who turns among the peaceful. Amen.

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